TECHNOLOGY DEPT.

APRIL 15, 1957

# Telephone Engineer

## AND MANAGEMENT

*THE NATIONAL TELEPHONE MAGAZINE*

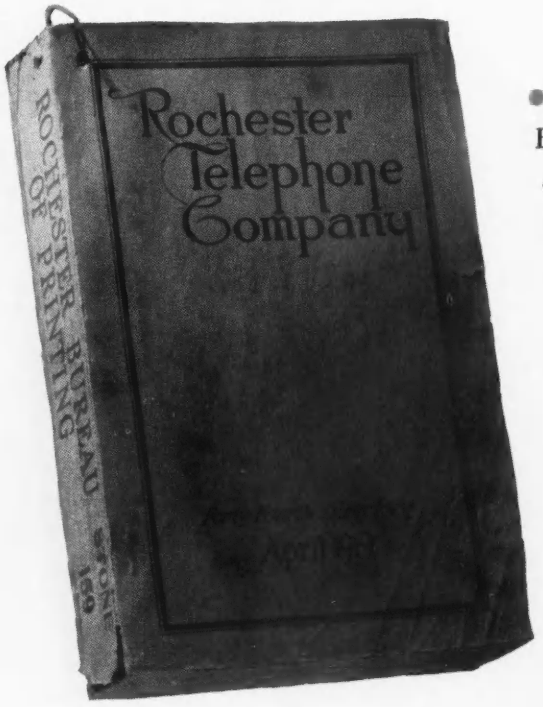
PUBLIC LIBRARY
APR 29 1957
DETROIT

Vol. 61 #8

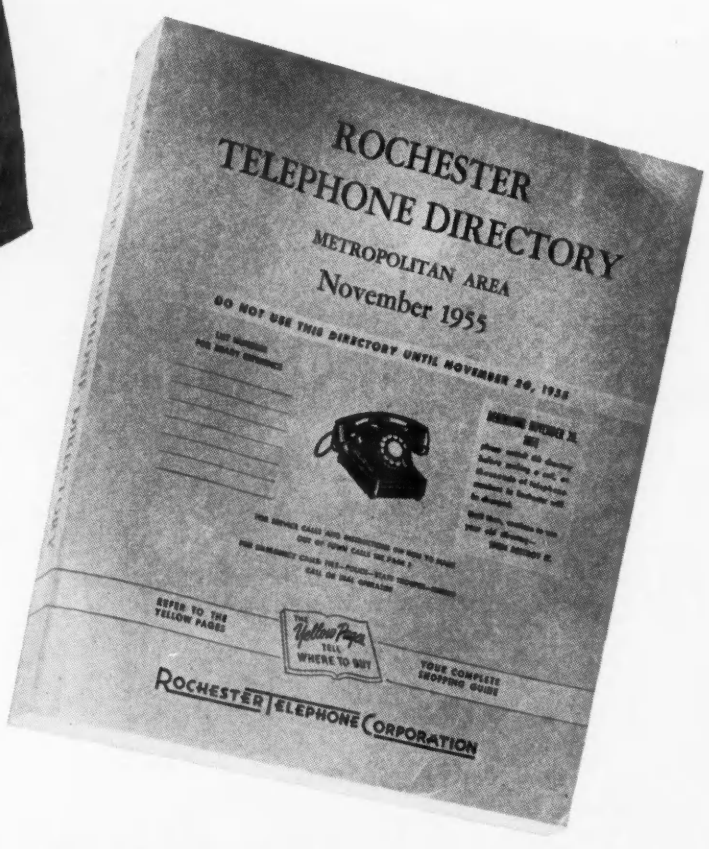
**Featuring Spring Construction & Maintenance**

- ★ Modern Construction Tools
- ★ A Real Economy Program
- ★ Modern Cable Construction
- ★ New Methods & Equipment
- ★ Prevention of Electric Shock
- ★ Operating Manual—Outdoor Booths

# meet some of
# L. M. BERRY'S
# long established customers...




• The Rochester Telephone Corporation is one of Berry's long established Telephone Company customers. For thirty-seven years Berry has been handling their Directory Advertising . . . proof of customer satisfaction.




• You, too, can join the list of Berry's 265 satisfied Telephone Company customers. Without obligation send us a copy of your directory. We shall be glad to study it and tell you how much revenue we think it should produce.

Since 1910 • **TELEPHONE DIRECTORY ADVERTISING EXCLUSIVELY**

# L. M. BERRY & CO.

**GENERAL OFFICES • HULMAN BUILDING**
**DAYTON 2, OHIO • MICHIGAN 7421**

*Koiled Kords RETRACTILE CORDS

# Give the Best Service

KOILED KORDS have proved over the years that they give the best service to subscribers and telephone companies alike.

KOILED KORDS have reduced cord maintenance and replacement to an absolute minimum.

KOILED KORDS keep their spring-like shape and last indefinitely under the toughest conditions.

KOILED KORDS are smooth, clean and cannot be harmed by moisture, grease, acid fumes or sunlight. Be sure your subscribers have the best . . . KOILED KORDS

Available from your independent telephone supplier in black and many colors to complement colored telephones.

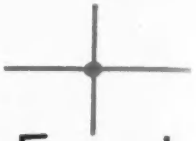
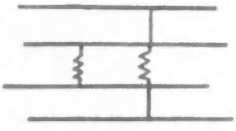


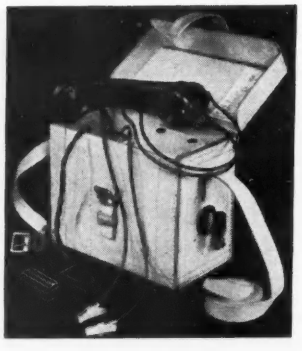
*Koiled Kords* INC., BOX K, NEW HAVEN 14, CONN.

Telephone: CHestnut 8-5515
TWX — NH84

KOILED KORDS, THE ORIGINAL RETRACTILE CORDS, ARE THE RESULT OF 17 YEARS OF RESEARCH, DEVELOPMENT AND USE.

*KOILED KORDS IS A TRADE MARK OF KOILED KORDS, INC.

Once upon a time there was a little telephone line. He was very high strung and lived far out in the country. During a storm he became very ill: he developed a short,  a cross,  and a ground. Even his feathered friends avoided him. When the storm was over, a man appeared carrying a small leather case, and in no time at all the little telephone line was well again, happily carrying calls. He's still puzzled, though, how the man found his troubles so quickly. You see, he doesn't know about West Test Set.



Moral: To find line troubles fast - use WEST TEST SET

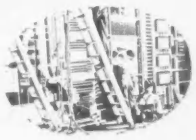
With a West Test Set, one man can clear up miles of line trouble in just one day. More and more companies are using West Test Set for trouble shooting on all types of circuits, and as portable telephones. Write today for full details. *Address: Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7. Or call HAymarket 1-4300.*

**AUTOMATIC ELECTRIC**

ORIGINATORS OF THE DIAL TELEPHONE

## Modern Tools Reduce Costs 41

This article was six months in the making by an author who worked with several construction crews to get the real information on tried and tested tools and several new tools receiving their first field tests. We liked his article so well we have used it as the lead article in this "Spring Construction & Maintenance" issue.



## Outside Plant Maintenance 48

A few words and many photographs were used to make this article prove "it is a costly matter to let outside plant, station and central office equipment deteriorate" and illustrates that "preventive maintenance forstalls trouble."

## Prevention Of Shock 30

Statistics prove that the majority of electric shock fatalities happen during the Spring and Summer months. This timely article gives the reason for electric shock accidents in warm weather and suggests precautions that will reduce the number of electric shock fatalities.

## Special New Products Section 70

What's new? We popped that question to our New Products' editor and he came up with so many answers that we enlarged his department for this "Spring Construction & Maintenance" issue (see pages 70, 74, 75, 78, and 79.)

## Plus The Regular TE&M Feature


★ The TE&M Editorial ..... 37
★ Industry Newsletter ..... 12
★ Washington Newsletter ..... 22
★ Safety Corner ..... 30
★ Free Literature ..... 32
★ TE&M Operating Manual ... 82

**Editorial & Business Staff**

EDITOR, Ray W. Smith
ADVERTISING DIRECTOR, Roy F. Smith
MANAGING EDITOR, John G. Reynolds
TECHNICAL EDITOR, John S. Reed
ADVERTISING MANAGER, Donald C. Sorensen
PRODUCTION MANAGER, Helen McCorkle
ASSISTANT PRDDUCTION MGR., Emily Budde
ADVERTISING ASSISTANT, Betsy Taylor
OFFICE MGR., Betsy Schroeder
WASHINGTON BUREAU, Roland Davies & Fred Hencke
CIRCULATION MANAGER, Pat Lawhorn


# Telephone Engineer

## AND MANAGEMENT


*THE NATIONAL TELEPHONE MAGAZINE*

**Vol. 61 No. 8** **APRIL 15, 1957**


**ARTICLES**


Editorial — "Doing What Others Are Doing" ..... 37
Prevention of Electrical Shock ..... 30
Modern Tools Reduce Labor Costs ..... Myrle Shafer 41
Real Economy - Outside Plant Maintenance ..... Richard Allen 48
Modern Cable Construction ..... John S. Reed 58
Special New Products Section ..... 70
Outdoor Booths (Part V) ..... 82
Minnesota Convention Report ..... 91


**FEATURES**


Coming Conventions ..... 6
The Open Forum ..... 8
Across The Editor's Desk ..... 10
Industry Newsletter ..... 12
Washington Newsletter ..... 22
Free Literature ..... 32
Back of the Book ..... John G. Reynolds 118


**DEPARTMENTS**


Buyers' Guide ..... 78
Classified Advertising ..... 106
Professional Cards ..... 107
Advertisers' Index ..... 117


**FRONT COVER**

AT REA MEETING ON FARM TELEPHONES: — REA's 17-member telephone advisory committee met in Washington, March 25 and 26 to review and make suggestions for conduct of the agency's rural telephone program. Here REA Administrator DAVID A. HAMIL, right, listens to a discussion of three of the members. Left to right, RIGGS SHEPPERD, manager of the Southwest Texas Telephone Cooperative, Hondo, Texas; ORLA L. MOODY, staff engineer, American Telephone & Telegraph Co., New York City; and WILLIAM C. HENRY, president of the Northern Ohio Telephone Co., Bellevue, Ohio, and chairman of the Small Business Committee of the United States Independent Telephone Association.


Volume 61, No. 8. Published on the 1st and 15th of each month by TELEPHONE ENGINEER PUBLISHING CORP. Office of Publication, Rochelle, Ill. Executive and Editorial Office, 7720 Sheridan Road, Chicago 26, Ill. Telephone — Rogers Park 4-3040. Subscriptions: U. S. and Possessions, $3.00 per year; Canada $3.50; in all other countries, $5.50. Single copies, U.S.A., 50 cents. Entered as Second Class matter at the post office at Rochelle, Ill. under the act of March 3, 1879.


Copyright 1957 by Telephone Engineer Publishing Corp.

# COMING CONVENTIONS

**OHIO** Independent Telephone Association, Deshler Hilton Hotel, Columbus, Apr. 16-17.

**NEBRASKA** Telephone Association, Hotel Cornhusker, Lincoln, Apr. 23-24.

**INDIANA** Telephone Association, Claypool Hotel, Indianapolis, May 8-9.

**WISCONSIN** State Telephone Association, Hotel Loraine, May 15-16.

**ILLINOIS** Telephone Association, Hotel Pere Marquette, Peoria, May 22-23.

**KANSAS** Telephone Association and **MISSOURI** Telephone Association, Town House Hotel, Kansas City, Kans., May 27-28.

**PENNSYLVANIA** Independent Telephone Association, Buck Hill Falls Inn, Buck Hill Falls, June 4-5.

**MAINE** Telephone Association, **NEW HAMPSHIRE** Telephone Association, and

**VERMONT** Telephone Association, Wentworth-by-the-Sea Hotel, Portsmouth, N. H., June 4-6.

**CALIFORNIA** Independent Telephone Association, Ambassador Hotel, Los Angeles, June 5-6-7.

**WASHINGTON** Independent Telephone Association, and **OREGON** Independent Telephone Association, Davenport Hotel, Spokane, Wash., June 13-14-15.

**NEW YORK** State Telephone Association, Scaroon Manor, Schroon Lake, June 17-19.

**ARKANSAS** Telephone Association, Arlington Hotel, Hot Springs, Sept. 16-17.

**MICHIGAN** Independent Telephone Association, Hotel Pantlind, Grand Rapids, Sept. 17-19.

**ROCKY MOUNTAIN** Telephone Association, Hotel Utah, Salt Lake City, Sept. 19-20.

**WEST VIRGINIA** Independent Telephone Assn., Blackwater Lodge, Davis, Sept. 30-Oct. 1.

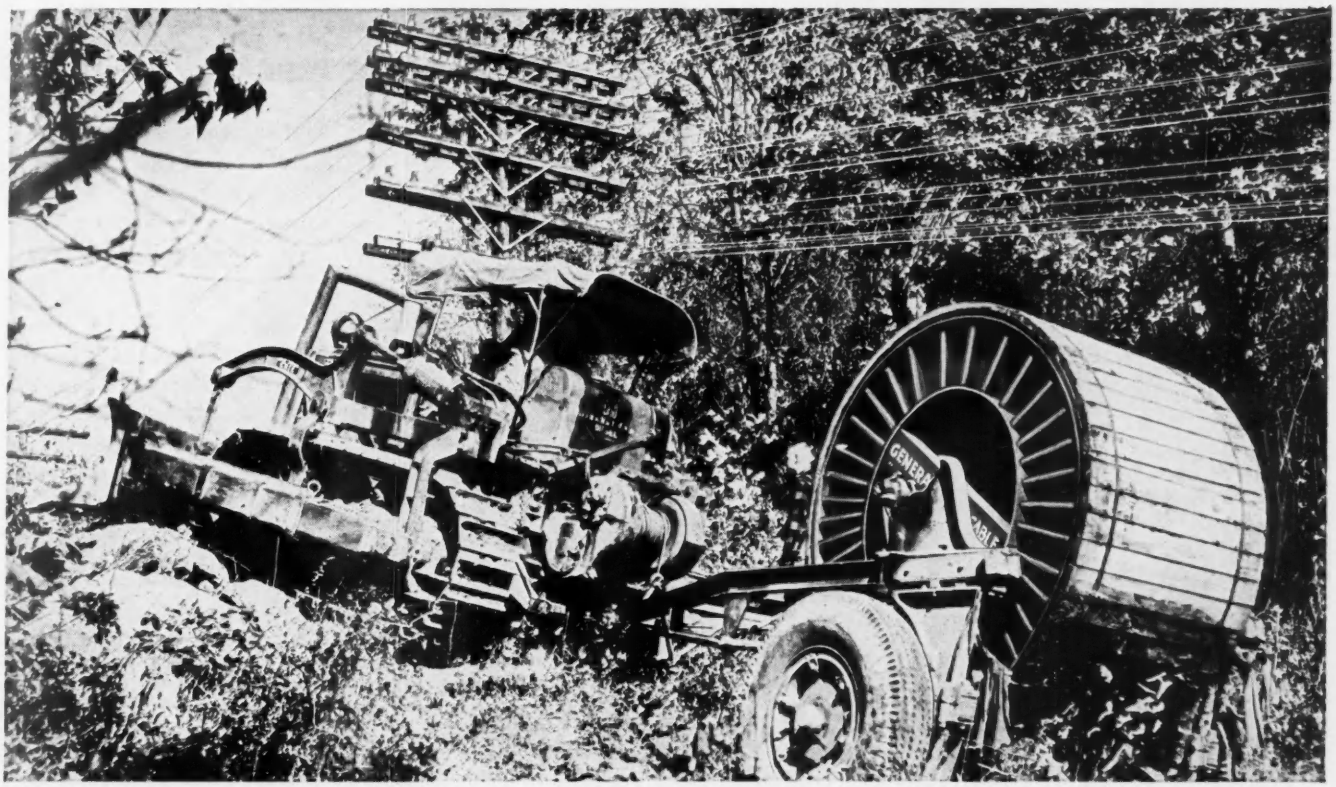
**NORTH CAROLINA** Independent Telephone Association, Carolina Hotel, Pinehurst, Oct. 3-4.

**UNITED STATES** Independent Telephone Association, Conrad Hilton Hotel, Chicago, Oct. 14-16.

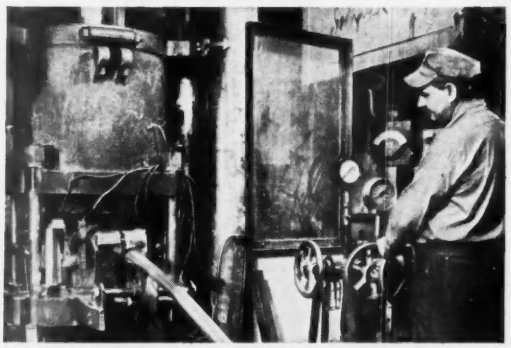
**OKLAHOMA** Telephone Association, Huckins Hotel, Oklahoma City, Nov. 21-22.

**FLORDIA** Telephone Association, The Balmoral, Miami Beach, Dec. 2-3.

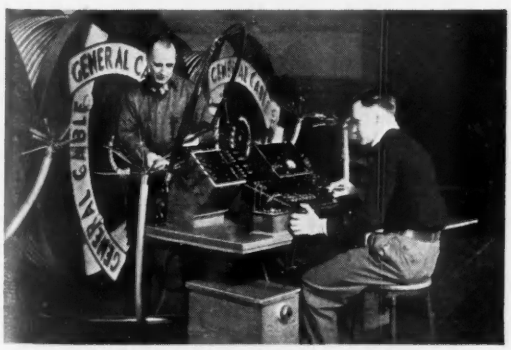
# GENERAL CABLE
# PAPER LEAD



# TELEPHONE CABLE



Press Extrudes Lead Sheath Over Insulated Cable Core.



Telephone Cable Testing

Strict material specifications and manufacturing standards ensure superior reliability in General Cable's service-proved paper lead telephone cable. Uniform mutual capacitance, staggered pair lays and quad lays provide maximum transmission efficiency with minimum crosstalk. Available in 6 through 2626 pairs in layer and unit constructions, quads, composites, and with video pairs, for aerial and duct services and armored for underground and submarine installations.

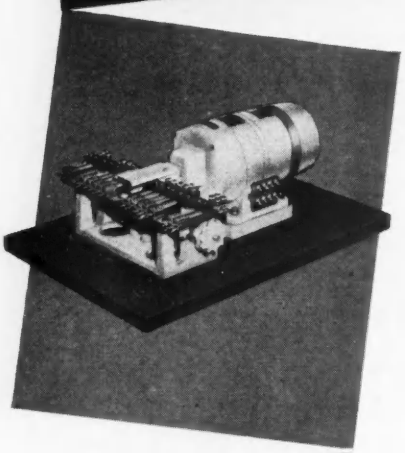
*Distributed by*
**AUTOMATIC ELECTRIC SALES CORPORATION**
**and LEICH SALES CORPORATION**

**GENERAL CABLE CORPORATION**
420 Lexington Avenue, New York 17, N. Y.
Offices and Distribution Centers Coast-to-Coast

***for quality and service...*** **specify GENERAL CABLE**

**HOLTZER -CABOT**

**Tone Alternator Interrupter Unit**



Furnishes positive, unchanging dial and busy tones and provides an accurate interrupter for busy signals and coded ringing. Tones are produced by an Alnico permanent magnet type generator, without the use of brushes and/or commutators. This eliminates the maintenance necessary with apparatus of the tone commutator type.

The interrupter is equipped with precisely machined nylon cams to assure a long life of accurate, continuous operation. Up to thirty positions available.

Features a drive motor utilizing 115 volts, 60 cycle, 1 phase. Type T54 utilizes 208 volts, 60 cycles, 3 phase or 115 volts, 60 cycle, 1 phase. Type T27 features 48 volts, direct current and 24 volts, direct current. Can be mounted in any position. Standard electrical features. Send coupon below for additional information.

HOLTZER-CABOT Telephone Equipment Division of NATIONAL PNEUMATIC CO., INC.

125 Amory Street, Boston 19, Mass.

GENTLEMEN: ☐ Please send me complete data on Tone alternator interrupter units.

☐ Please have representative call on..... (date)

Name.....

Company.....

Street.....

City.....Zone....State.....

## "24 Issues — $3 Per Year"

TO THE EDITORS: . . . "I am a switchman for the New York Telephone Co., and the other day I read the latest issue of your magazine and liked it very much. I am an Engineering student and I find your magazine very educational and helpful. I am interested in obtaining your magazine and I would appreciate it very much if you would inform me of the procedure. . . ."

*Edward F. Weingart,*
1415 *Poulson St.,*
*Wantagh, N. Y.*

## "We Liked It, Too"

TO THE EDITORS: — "Just another little note to tell you how much I appreciate receiving your magazine and also to comment on the picture on the cover of your February 1st issue.

"We in this district are very proud of the Inter-County Telephone Co., and we feel that this particular innovation was far-sighted and adds greatly to the service Inter-County is rendering their community . . . ."

D. L. Harper,
Tampa, Fla.

*We'll have more about Inter-County's "Fone Foyer" in a future issue.*

## "Basic Electronics"

TO THE EDITORS:—". . . . Please send me information on "Basic Electronics," — price and ordering information.

*Claude Partridge, Manager,*
*Dexter Mutual Telephone Co.,*
*Dexter, Iowa.*

*Complete information on "Basic Electronics" appeared on page 44 of the April 1 Issue.*

## Reprints Will Be Made

TO THE EDITORS:— . . . . "We would appreciate receiving 4 copies of each article on "Profits and Service Through Better Management," as listed in the January 1, 1957 issue of Telephone Engineer and Management Magazine. Please advise how they may be obtained.

*C. E. Whitney, Plant Engineer*
*The Cincinnati and*
*Suburban Bell Tel. Co.,*
*Cincinnati 2, Ohio.*

## "Electrical Measurement"

TO THE EDITORS:— ". . . The March 1, 1957 issue of *Telephone Engineer & Management* contained an article entitled "Plant Practices." Said article made reference to a publication on electrical measuring instruments titled "Electrical Measurement." We would appreciate learning how we may obtain the book . . ."

*Bernard E. Kinsock*
*Cuba City Tel. Exchange Co.*

*Copies may be ordered from Educational Division, "Telephone Engineer & Management," 7720 N. Sheridan Rd., Chicago 26, Ill.*

## "They're Coming Up"

TO THE EDITOR'S:— ". . . The management and plant engineering articles of your magazine are particularly good . . . I would like to see a few additional articles on economics in relation to our industry."

*L. E. Scott, Gen. Mgr.,*
*Linn County Telephone Co.,*
*Lebanon, Ore.*

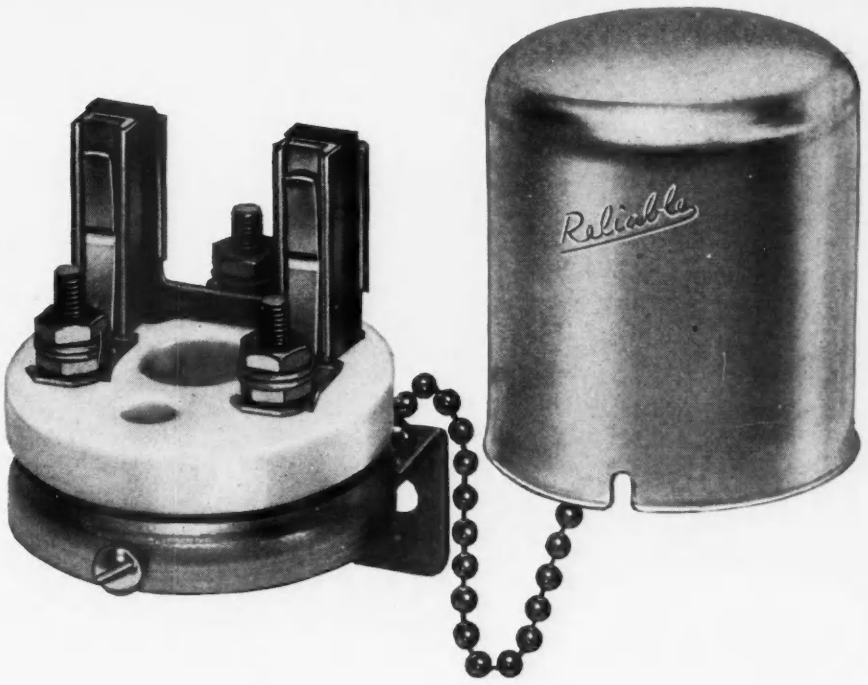
## "We'll Try To Please"

TO THE EDITORS: — ". . . Enclosed please find, Postal Money Order, for $3.00, for which please send me, *Telephone Engineer & Management* for one year.

"A friend of mine gave me a copy of your fine magazine and I have enjoyed reading it very much. I also saw a picture and a write up on an old friend of mine, on page 22, of the March 15th issue, Mr. Harold I. Stecher, who has just been named Assistant Chief Engineer, of the General Telephone Co.

"Looking forward to many hours of enjoyable reading with your fine publication. . . ."

*Frank E. Ray, Jr.,*
*Laurenkill Rd.,*
*Ellenville, N. Y.*




# New Catalog No. 450 Protector

Whether the need for a single pair lightning and static drainage unit is scattered or highly localized is best known to the folks who operate the telephone plant.

The term "buffer" has been used to describe such a protective unit and the term seems to be well suited to Reliable's new Catalog Number 450. Its function is to drain lightning and static discharges from open wires that are connected to cable and reduce the voltage at the cable junction.

The new unit protects protected cable terminals and will perform in front of unprotected terminals. It is also protection for loud speakers, coils, filters and such.

Here again Reliable engineers have studied both cause and effect and have designed a protector to take care of a problem that is recognized throughout the Communications Field.

60 YEARS OF INDEPENDENT TELEPHONY 1897-1957

Reliable

RELIABLE ELECTRIC CO. • CHICAGO

**CUT**
**MAINTENANCE**
**INSTALLATION**
**Costs with the**
**PREST-O-LITE**
Trade-Mark
**Telephone Outfit**
**SOLDER • HEAT**
**SPLICE • BRAZE**

**Complete Outfit, illustrated, only $21** (List)

This handy outfit is especially designed to help do better work — at less cost.

**Fast**—Gives full heat *instantly*, burning PREST-O-LITE acetylene from a convenient, small tank. Just open the valve and light up. No pumping, priming, or other time-wasting preparations.

**Efficient**—Solder lugs, clamps, line splices; heat; braze. Whatever the job, fully adjustable pressure regulator assures the *exact* flame. No fumes, smoke, or soot.

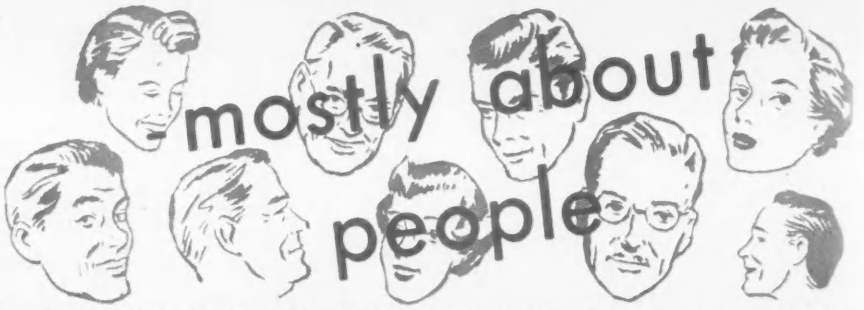
**Handy**—Light and compact. Reaches easily into those hard-to-get-at places. Always ready for instant use.

**Dependable**—Rain or shine, you're sure of the *same* concentrated, full-heat flame on every job.

See your nearest LINDE jobber today for further information. Or write: LINDE AIR PRODUCTS COMPANY, a Division of Union Carbide and Carbon Corporation, 30 East 42nd St., New York 17, N. Y. In Canada: Linde Air Products Company, Division of Union Carbide Canada Limited, Toronto.

Get it from
Your LINDE Jobber

The terms "Linde" and "Prest-O-Lite" are registered trade-marks of Union Carbide and Carbon Corporation.




# ACROSS THE EDITOR'S DESK

## "Spring Construction" Issue

ALL members of our Editorial Staff are quite proud of the Spring Construction Features contained in this issue, especially *John Reynolds*, our managing editor, who has been planning the issue for many months. In addition to many features on construction and maintenance *John* is particularly proud of the new products' section which for this issue has been greatly enlarged. We hope you agree with us on the value of this particular edition.

## "Who's On 'First'!"

ON PAGE 67 of our March 15 issue *Albert E. Rose* of Wilmington, Del. described the new drive-in collection counter of his company and optimistically added it was a celebrated "first." *George Rose*, Tampa, (no family kin) let us know while testing Peinsular's direct dialing equipment that his company had been using a drive-in collection plan for years and even they were not the first. As we reported it was a "first" for Delaware. Gertrude Stein comes to mind with "a rose is a rose is a rose"!

## John F. Jaap

JOHN F. JAAP, vice president of the Wirecom Division of Cook Electric Co., and our good friend of more years than we want to count, died last month at Dallas, Texas, where he and Mrs. Jaap were visiting his daughter and her family. The issue carries the obit but we want to say something about *John* that is not usually carried in an item of that nature.

*John Jaap* saw the Independent telephone industry grow up and had a lot to do with its growth. He was an unassuming gentleman and although his health had not been good for many years it was seldom anyone but close friends knew of it. His burden was heavy but his grin and handshake ever firm and smiling.

We join the industry in mourning a pioneer member who devoted his life and efforts to the Independent telephone industry. The Jaaps retired and moved to St. Petersburg, Fla. several years ago but *John* was active for his company until his death.

## Gerald Cass

ALTHOUGH we did not know *Gerald Cass* as well as we would have liked we were quite shocked of his passing from a heart attack on March 22. He was the owner of the Hancock (Minn.) Telephone Company and was associated with Communications Consultants of Fargo, N. Dakota.

## Harry Reinhardt

THE FEBRUARY issue of *Life Lines*, lively and well-edited magazine of the California Water & Telephone Co., was particularly newsy to the industry nationally. It carried the story of the retirement of *Harry Reinhardt* after 28 years of association with the company and with *Chester H. Loveland*, its founder. Pictured was the beautiful plaque presented to *Harry* by his associates in the company. The issue also carried the news that *Art Scripture* had been called to the head office in San Francisco.

## L. H. Meyer

CONGRATULATIONS to *L. H. Meyer*, president of the General Telephone Co. of Indiana, on his election to the board of the USITA to fill the unexpired term of *Frank Bohn*, Ft. Wayne, resigned. At the same time we pass on a "Well Done" to *Frank Bohn* on his more than 20 years of yeoman service to this board and to the Independent telephone industry.

# "I know what it's like to sleep all night... we're using IRRADIATED cable!"

NEW... IMPROVED

# SUPERIOR TELEPHONE CABLE

## NOW contains a polyethylene tape* developed by radiation chemistry

New, improved SUPERIOR TELEPHONE CABLE *maintains* the service longer because the dielectric strength is doubled for greater lightning protection! Maintenance costs are cut because outages are reduced to a minimum.

SUPERIOR CABLE saves splicing time and gives better all-round service too because the deviation in mutual capacitance is now less than 1½%!

And because the insulation is "graded" to conductor sizes . . . the universal transmission standards for loading coils and terminating equipment is closely matched!

SUPERIOR CABLE is accepted by REA and conforms to REA Spec. PE14.

Use all-plastic SUPERIOR CABLE for aerial and direct burial installations . . . it's resistant to moisture, ozone, oils, acids and alkalis! Available with regular spiral shield (5 mil aluminum) or, in certain sizes at slight additional cost, longitudinal shield (8 mil aluminum).

A self-contained tape, marked at one foot intervals up to 10,000 feet, guarantees the footage you receive and lets you measure the footage you use.

For Top Performance at less cost . . . order Irradiated SUPERIOR CABLE today.

"Super-Splice"

**Make splices MOISTUREPROOF, WATERPROOF . . . from inside out!**

New Superior "Super-Splice" makes the splice permanently as good as the cable. An REA Standard. Write for details.

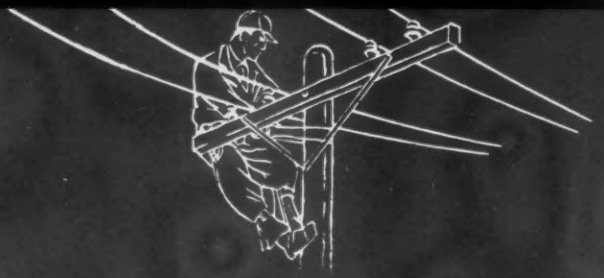
*Irrathene® irradiated polyethylene film, a General Electric product.

*For detailed information and price, write*

**SUPERIOR CABLE**

**SUPERIOR CABLE CORPORATION** Hickory, North Carolina

# INDUSTRY NEWSLETTER



## IBEW Plans Push For Federal Agency To Handle Telephone Labor Disputes

THE INTERNATIONAL Brotherhood of Electrical Workers (AFL-CIO) — which holds a number of collective bargaining agreements among operating companies in the Independent telephone industry and others with the Bell System, particularly in Western Electric Co. — plans to push for legislation establishing a federal agency to handle labor disputes in the telephone industry along the same lines as those provided in the railroad industry under terms of the Railway Labor Act.

IBEW President Gordon Freeman said that "In the interests of more than a million telephone workers, the thousands of small and large telephone companies, and in the public interest, the Executive Council of the IBEW . . . has decided to urge Congress to pass a Communications Labor Act."

The Railway Labor Act, first enacted by Congress in 1926, establishes procedures for handling disputes in the railroad and commercial airlines industries. The act provides for a 36-member National Railroad Adjustment Board, composed equally of management and union representatives, that handles disputes growing out of interpretation or application of agreements between companies and unions; and a National Mediation Board, with three members appointed by the President, which considers disputes concerning changes in rates of pay, rules, or working conditions, and other disputes not referable to the NRAB.

Findings of the two boards are not binding upon parties to disputes, but if the parties voluntarily agree to arbitration, the findings of the arbitration board are binding. The act also provides that if a dispute between a carrier and its employes cannot be settled by other means and the Mediation Board views that the dispute threatens a national emergency, it can call upon the President to name a fact-finding board. The findings of this board are also not binding.

Mr. Freeman, commenting on the action of the IBEW's Executive Council, said, "Long strikes which have crippled telephone service in many parts of the nation, the violence and destruction following in their wake, are all symptoms of a sickness which plagued the railroads of this country for many years until the enactment of the Railway Labor Act. The economic facts in this industry make it desirable for labor, industry and the public to establish procedures which will aid in resolving industrial disputes in a peaceful manner . . . The communication workers of this nation have fallen down the wage ladder. They find themselves hogtied by state court injunctions when they try to go to arbitration. Union security is non-existent excepting where the IBEW has succeeded in getting it."

## Still Around: Communication Excises

IN RELEASING a general statement of its conclusions on excise administration and technical revisions, the House Ways & Means Committee has left unchanged, at least for the time being, the recommendations on communications excises made earlier by a subcommittee headed by Rep. Aime J. Forand (D., R. I.).

It is understood that communications tax change proposals made to the committee but not incorporated in its recent summary are still receiving consideration, and conceivably some change could be made when the measure is finally reported. The extended consideration being given to the tax proposals, and the probability that more weeks will go by before a "clean bill" is reported, are beginning to dim prospects for final Congressional action on the measure this year. Any action taken by the committee or the House, however, will hold over to the second session of the 85th Congress next year.

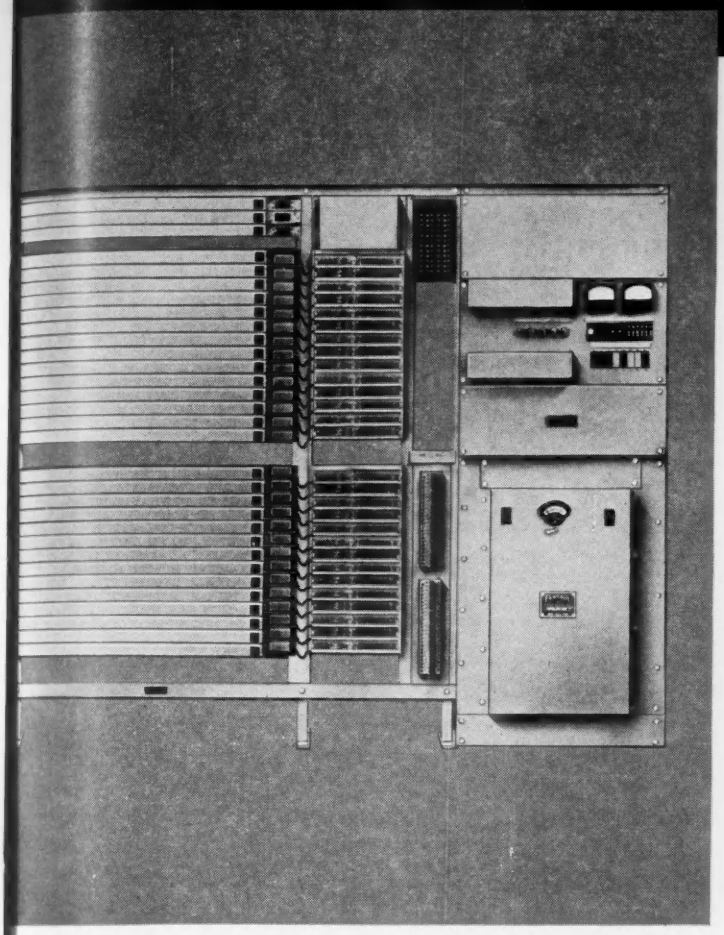
Because the committee summary presents proposed changes in clearer language than previously, the section on communications excises follows in partial text:

"The committee this year has made no changes in the communications tax provisions adopted last year, but these provisions are to be subject to further technical review. At present the tax rates are 10%, except in the case of wire and equipment service, where the rate is 8%, and the bill makes no changes in these rates.

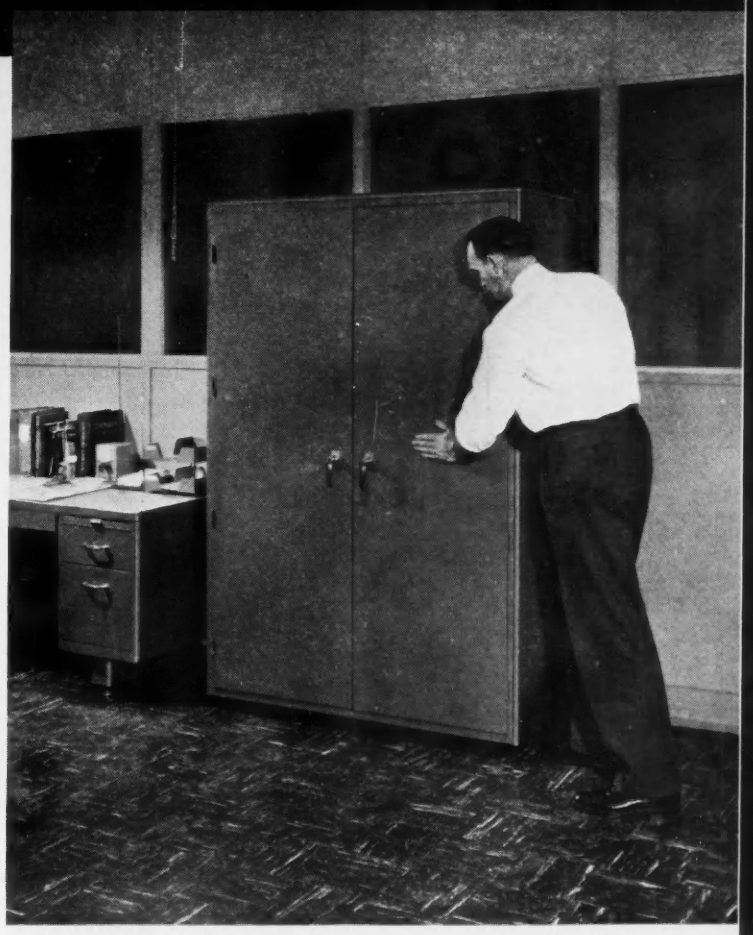
"*General telephone service* — Under present law local telephone service is defined as any telephone service not taxable as long-distance telephone service; leased wire, teletypewriter, or talking circuit special service; or wire and equipment service. As a result of the interrelationship of this definition and the definition of long-distance telephone service, toll telephone messages for which the charge is 24 cents or less are presently classified as local telephone service. In addition, amounts paid for leased wires within a local exchange area and involving oral communication, have been classified under regulations and rulings as local telephone service, as distinct from leased wire, etc., service.

"The new bill will rename this category 'general tele-

*Please turn to page 16*



F-80 PBX: Switching and power equipment are mounted on separate matching frames. Approximate dimensions total 6 feet high, 7 feet wide, 1 foot deep.



F-40 PBX: Rolls anywhere in office. Cabinet is only 6 feet 4 inches high, 4 feet 1 inch wide, 2 feet deep.

# Open new channels of commercial revenue . . . with these PBX's

You'll find the XY® F-40 and F-80 Systems just right for such customers as small factories, department stores, large offices, schools and other business and institutional subscribers.

The F-40—capacity up to 40 lines and 10 trunks—is a complete internal dial PBX with central office connections, yet it takes only 8 square feet of floor space. To install it, you simply connect the telephone cable leads and plug the power supply into a standard 110-volt AC outlet. Cordless-type attendant's cabinet is the size of a modern adding machine.

The F-80—capacity up to 80 lines, 14 talking paths, 10 central office and 4 information trunks —is wired for night answering service and offers single party service, restricted and "executive-right-of-way" service, and conference and code call facilities.

This PBX is furnished with cord-type attendant's cabinet in smart modern styling.

Give your commercial revenue a boost with these subscriber-pleasing PBX's. For complete technical details and selling aids call or write the Stromberg-Carlson representative in your area.

S-C STROMBERG-CARLSON COMPANY

A DIVISION OF GENERAL DYNAMICS CORPORATION

Sales Offices: Atlanta 6, Chicago 6, Kansas City 8, Rochester 3, San Francisco

GD GENERAL DYNAMICS

# THE HAMBURGERS ARE WONDERFUL— SO IS PAYSTATION REVENUE

They serve mighty good hamburgers at Azars Drive-In, in Fort Wayne, Indiana. The local telephone company figured this was an ideal spot for an outdoor paystation. Folks at Azars agreed.

It was profitable to both.

Many passers-by who stop to place calls also order hamburgers. And regular Azars customers have shown they like having a paystation nearby. Average *monthly* revenue for a typical six month period was a whopping $107.15!

AUTELCO paystations are proving terrific revenue-producers for a lot of companies. Circular 1877 gives you detailed information on the new "80-series" which offers more user satisfaction than ever. Write: *Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7. Or call HAymarket 1-4300.*

Our Survey Simplifier will help you pick the best paystation sites. For your copy, just write to the address above.

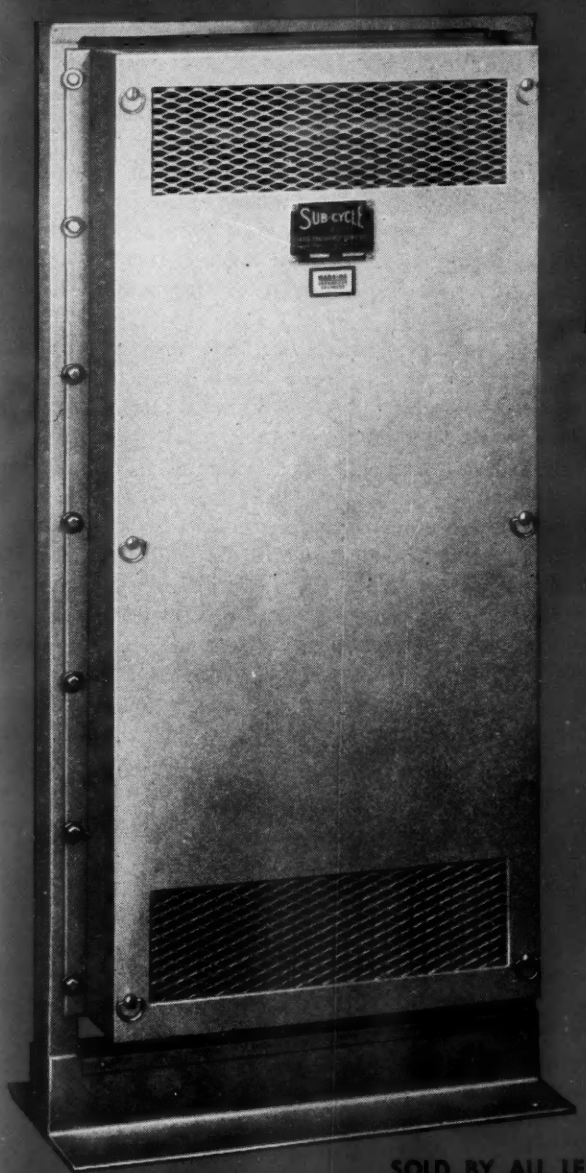
AUTOMATIC ELECTRIC

ORIGINATORS OF THE DIAL TELEPHONE

another **FIRST** by Lorain!

# THE S-5 SUB-CYCLE

## FOR SYNCHROMONIC RINGING!




**PERMANENT**

*Dependable*

**OPERATION!**

**YEAR AFTER YEAR**

Making use of a unique conversion principle combined with basic Sub-Cycle circuits used repeatedly in other Lorain equipment, the S-5 Sub-Cycle has power to spare. Depend upon it to deliver full-rated capacity even under the most gruelling conditions. It has excellent voltage regulation, and will always deliver the exact synchromonic ringing frequencies. The S-5 has no moving parts; therefore, it provides the permanent, maintenance-free, economical operation that is characteristic of all Sub-Cycles.

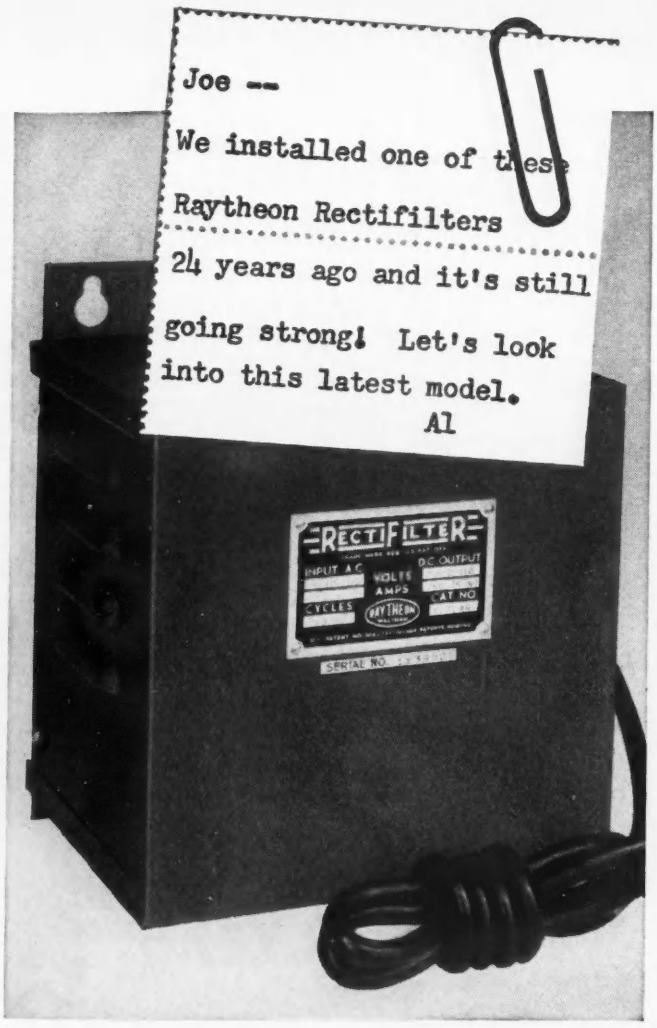
The Model S-5 can be equipped to supply either 15 cycles or 20 cycles as the fifth frequency; if only four frequencies are required, the converter is designated as a Model S-4. A minimum of floor space, only 24-3/8" by 15", is required.

WRITE FOR BULLETIN 169

SOLD BY ALL LEADING TELEPHONE DISTRIBUTORS

LORAIN PRODUCTS CORPORATION · LORAIN, OHIO

FLOTROL
PARTNERS IN DEPENDABILITY
SUB-CYCLE




# HERE'S THE ANSWER TO POWER SUPPLY PROBLEMS

A never-failing supply of D. C. voltage from A. C. sources, Raytheon Rectifilters® provide full, noise-free power to vital telephone equipment.

These versatile units eliminate the need for batteries, operate PBX's and other key equipment; provide 24 volts for vacuum tube filaments; function in series with regular 24 volt central office batteries for toll service.

Conservatively rated, carefully engineered and made of finest quality components, Raytheon Rectifilters provide years of dependable low-cost performance.

For full details see your telephone supplier or write Dept. 6120—request bulletin No. 4-335.

*Excellence* RAYTHEON *in Electronics*

**RAYTHEON MANUFACTURING COMPANY**

• **Commercial Equipment Division, Waltham 54, Mass.**

## Newsletter

*(Concluded from page 12)*

phone service,' and specifically provides that it does not include any toll telephone service, teletypewriter exchange service, or wire and equipment service. Thus, this category will no longer include toll telephone messages where the charge is 24 cents or less, and will not include leased-wire service within a local exchange area.

"*Toll telephone service* — Long-distance telephone service under present law is defined as a telephone or radiotelephone message or conversation for which the toll charge is more than 24 cents.

"Under the new bill the name of the category will be changed to 'toll telephone service' and all toll charge calls, whether over or under 25 cents, will be included in the category if the charge is paid within the United States. This change will extend somewhat the exemption previously provided for long-distance telephone service in the case of news services. Under the bill this exemption for news services will be available in the case of all telephone toll charges instead of only those toll charges of more than 24 cents.

"*Wire mileage service* — As previously indicated, under present law a tax is imposed on leased wires, teletypewriters, or talking circuit special services. As indicated above, the teletypewriter exchange service will be placed in a special category. The remaining services will be redesignated as 'wire mileage service' and certain revisions will be made in the taxable base of these services.

"Wire mileage service is to be defined as any leased wire or radio circuit service which is not taxed as general telephone service, toll telephone service, telegraph service, teletypewriter exchange service, or wire and equipment service. The category is also defined as including any telephone or radio telephone service not included in the other communications tax categories.

"The effect of the change in this definition, together with the changes made in the category under the bill to be known as general telephone service, is to shift over to this category certain leased wire services which are within a local exchange area. On the other hand, the category is to be narrowed by an exemption provided for interior communication systems which are located entirely on the premises of the subscriber. Also to be excluded from the application of this tax are charges made for terminal facilities, for example, sending and receiving equipment.

"*Wire and equipment service* — At the present time a tax of 8% is provided with respect to certain services called wire and equipment services. These include fire and burglar alarm systems, certain services transmitting information with respect to stock-market quotations, sports, weather, and time, and the supplying of musical programs to offices, factories, etc. The base of this tax includes charges for services performed for the subscriber.

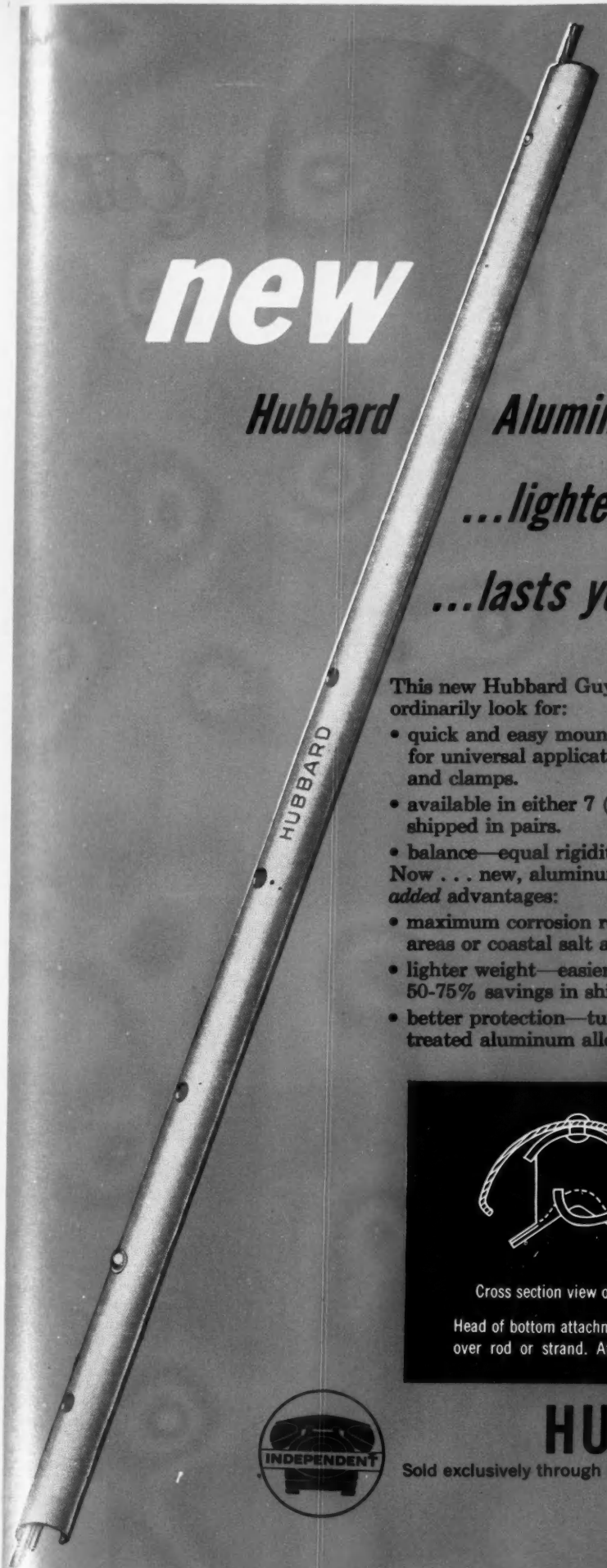
"The new bill excludes from tax interior communications systems, such as burglar alarm systems, wholly within the premises of the subscriber. Otherwise, the coverage of this tax is left substantially as under present law. . . ."

# new

## Hubbard Aluminum Alloy Guy Protector

## ...lighter, stronger!

## ...lasts years longer!

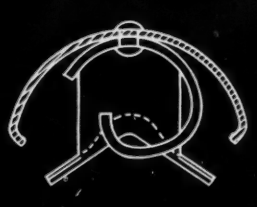



This new Hubbard Guy Protector has all the features you ordinarily look for:

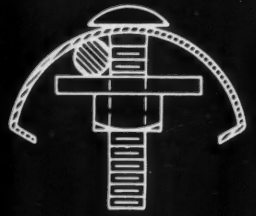
- quick and easy mounting—multiple attachment holes designed for universal application, at any height, to guy wires, rods and clamps.
- available in either 7 (Al-27) or 8 (Al-28) foot lengths, shipped in pairs.
- balance—equal rigidity and strength throughout.

Now . . . new, aluminum alloy construction brings you these *added* advantages:

- maximum corrosion resistance—even in heavy industrial areas or coastal salt air regions.
- lighter weight—easier stock handling and installation. 50-75% savings in shipping charges.
- better protection—turned lengthwise edges and new heat-treated aluminum alloy give maximum strength, durability.



Cross section view of top clip



Cross section view of bottom attachment

Head of bottom attachment bolt locks in place, will not turn as nut is tightened. Attaches over rod or strand. Attaches to clamp by substituting protector bolt for clamp bolt.

INDEPENDENT

**HUBBARD** AND COMPANY

Sold exclusively through Electrical Distributors

Pittsburgh 1, Pa.
Chicago, Ill.
Oakland, Calif.
Plano (Dallas), Texas

any

# yway you look at it

## ...the North N-541 is a superior telephone

Considered as an instrument of communication, the NORTH N-541 has established its superiority with "Hi-Fi" quality transmission. The most modern reception and transmission units, fitted into audio tested cavities, increase fidelity of voice transmission and reception. The N-541 also has an improved anti-side-tone circuit and a higher gain which provides clear, natural transmission over long loops. An automatic compensating network insures the same clear, well controlled level on short loops.

The North dial, the most advanced in the industry, has proved its superiority in dependability, quiet, smooth operation, and simplicity of adjustment. The extended dial plate is easier to read. The simple gear train is made without worm gears. In the large diameter governor, the braking shoes lead into the drum, resulting in a smooth and positively controlled revolution of the dial. Both pulsing and off normal springs have double contact points.

As an integral part of the furnishings of a room, the clean modern lines of the N-541 further enhance its superiority! The graceful simplicity of both pedestal and handset give the N-541 an appearance gracious and decorative. And in six Color-Tones as well as black, the N-541 becomes colorfully decorative in any room, any setting.

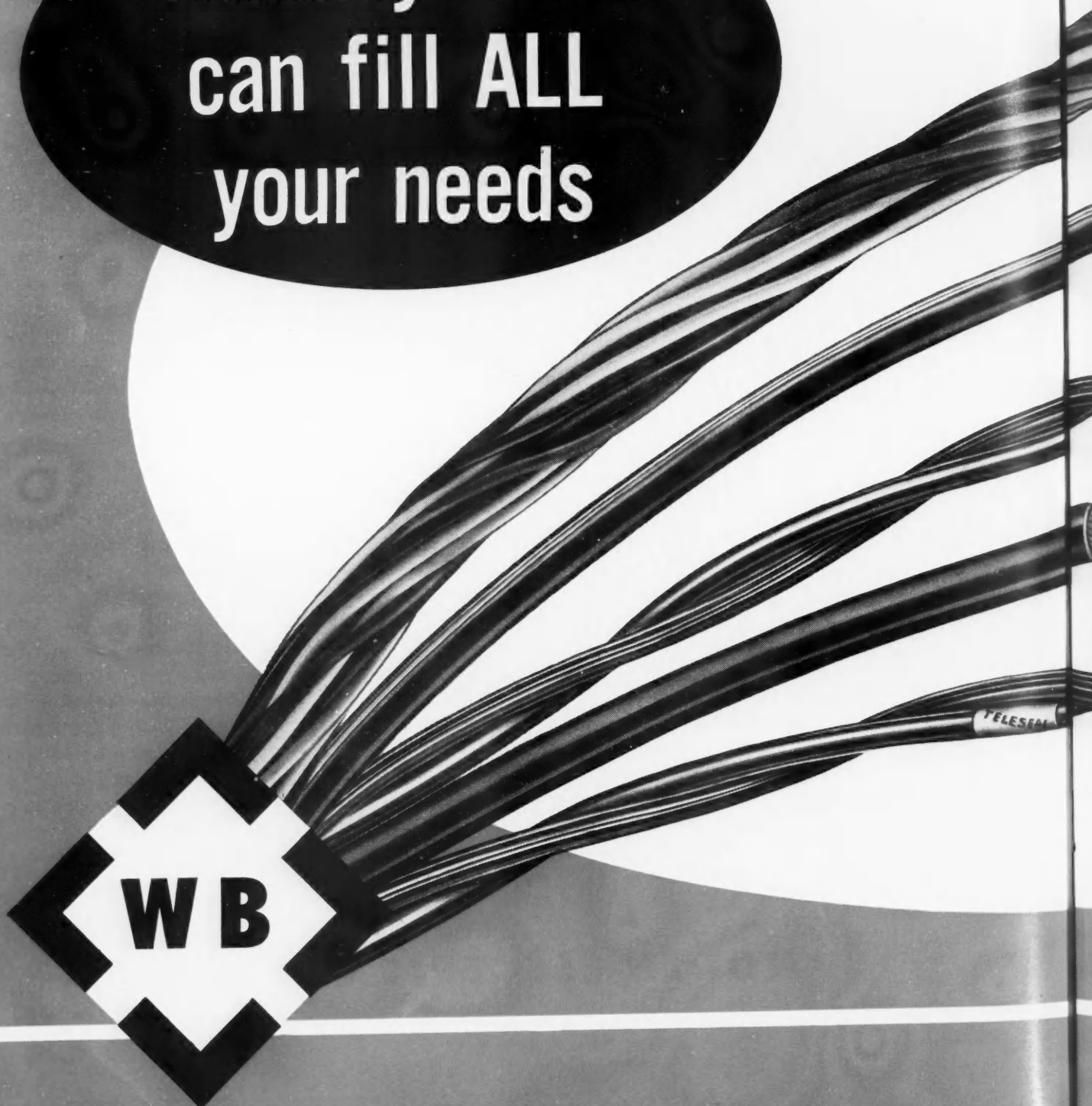
Yes—Any Way You Look At It—The North N-541 Is a Superior Telephone!

**NORTH ELECTRIC COMPANY**

**655 SOUTH MARKET STREET • GALION, OHIO**

# Want High Quality

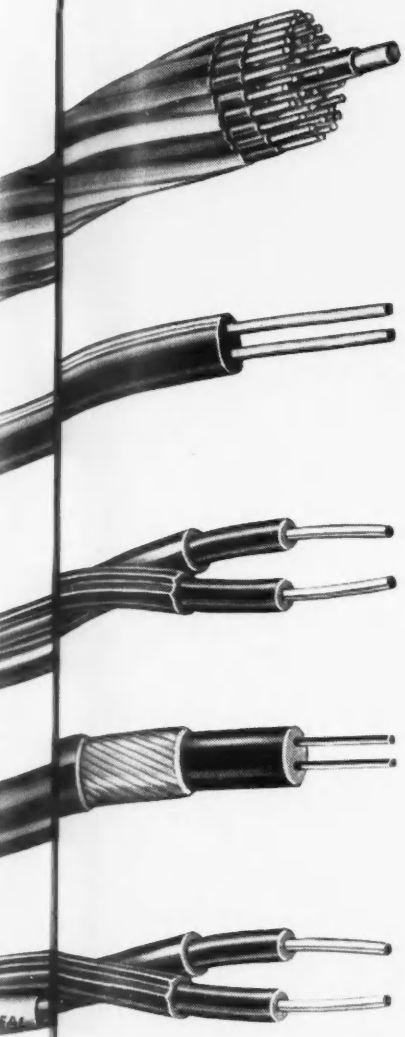
## Whitney Blake can fill ALL your needs



WB

WB has that which so many others have yet to gain . . . EXPERIENC

# DISTRIBUTION WIRE?



MULTI-PAIR DISTRIBUTION WIRE . . . Self supporting, available in 3, 6, 11 and 16 pair No. 19 AWG copper, polyethylene insulation and color-coded polyvinyl chloride covering.

PARALLEL DISTRIBUTION WIRE . . . Self supporting, available in extra high strength 30% Copperweld No. 14 AWG and .080". Insulated with WB special, tough black polyethylene compound.

TELEPRENE® DISTRIBUTION WIRE . . . Self supporting, available in No. 14 and No. 16 AWG hard copper conductors rubber insulated and neoprene jacketed.

ARMORED TELESEAL DISTRIBUTION WIRE . . . For direct burial, in No. 16 AWG soft copper conductors with specially developed, low moisture absorbing rubber insulation. Served armor of flat steel wires, neoprene jacket.

TELESEAL® DISTRIBUTION WIRE . . . For direct burial, available in No. 16, No. 14, or No. 12 AWG hard copper conductors, specially developed, low moisture absorbing rubber insulation, neoprene jacketed.

**WHITNEY BLAKE has a complete line of distribution wire to serve the Independent Telephone Industry no matter what the need may be.**

**From one source — WHITNEY BLAKE — telephone companies can fill all their requirements with assurance of one high standard of quality . . . quality that has again and again demonstrated that the best wire — the longest lasting wire — is far more economical than a lower priced, short lived wire that needs early replacement.**

**WHITNEY BLAKE telephone wires are made by experienced wire makers and have proved their value in years of long service across the nation.**

60 YEARS OF INDEPENDENT TELEPHONY
INDEPENDENT
1897 — 1957

Well Built Wires Since 1899

©1957

WHITNEY BLAKE COMPANY

NEW HAVEN 14, CONNECTICUT

## Big Question — What Is Or Is Not A Regulated Common Carrier?

FUNDAMENTAL question of what is or is not a regulated common carrier service, subject to the jurisdiction of the Federal Communications Commission — and indirectly, subject to the jurisdiction of state regulatory commissions — has been laid before the FCC in a case which has attracted more attention than most of the common carrier matters which come before the Commission.

As a result of the filing with the FCC of tariffs covering the lease and maintenance of private mobile radiotelephone systems by the American Telephone & Telegraph Co. Long Lines Department, and protests filed with the FCC by several groups interested in private communications services, the FCC has suspended the Long Lines tariffs and ordered a general investigation of the subject.

For the Bell System, part of the question is one of interpretation by the FCC of the antitrust consent decree entered into by the System and the Justice Department slightly more than a year ago. The decree provides that the Bell companies shall not engage in non-regulated activities for commercial customers, and also sets up a five-year limit on lease-maintenance services for existing commercial customers.

If the FCC concludes that the service is a common carrier offering, it becomes, from the interstate standpoint, acceptable under the consent decree. The same principle applies to intrastate services regulated by state commissions.

One state commission, the California Public Utilities Commission, already has concluded that the service is a common carrier offering, in a case based on issues similar to the one now before the FCC.

Protestants against the telephone companies' offerings generally are operators of private communications service, who are not particularly anxious to see the telephone companies in the field, or manufacturers of mobile radio equipment, principally Motorola, whose sales are mainly to the private organizations.

The FCC order establishing the hearing said it appears that "a substantial question is presented by the . . . tariff schedules as to whether the lease and maintenance of private mobile communications systems," as contemplated by the tariff schedules, "constitute a common carrier communications services which is subject to the Commission's jurisdiction . . ."

The order suspended the tariffs for 90 days, to June 28, the limit of the Commission's statutory suspension powers. Long Lines has advised the Commission, however, that it will voluntarily suspend the tariffs on request for the additional time needed for the FCC to decide whether they will be accepted.

Dividing the case into two parts, the Commission first will take up the question of whether the tariffs constitute a common carrier offering. If it decides that the service is subject to its jurisdiction, it then will get into the second phase of the investigation — the lawfulness of the rates and regulations proposed.

In a reply to the petitions for suspension filed with the FCC a few days before the hearing order, Long Lines said that in every situation under the tariffs, there will be operation and control channels which are physically interstate. It said the "prime fallacy" of the Motorola argument is the assumption that communication means only transmission, and that definitions of wire and radio communications encompass the phrase "including all instrumentalities."

"It is worthy of special consideration," Long Lines said, "that the California commission concluded that similar tariff offerings were subject to commission jurisdiction, in a case involving substantially the same issues and parties."

The consent decree, it was added, clearly permits the service, and the five-year limitation on non-regulated activities "is in no way a prohibition as to the continuance of lease-maintenance where the charges are subject to public regulation. On the contrary, when properly read in context, the provision further supports the conclusion that such lease-maintenance is entirely permissible where charges are subject to regulation."

Declaring that the protests make "extravagant claims" that the Bell System is attempting to obtain frequencies now allocated to private users, Long Lines said this is answered by the statement of the Bell System issued more than two years ago stating that its lease-maintenance policies are designed to utilize available resources fully, and that the practice does not jeopardize private frequency allocations.

## REA Advisors Endorse REA's New, Liberalized Equity Requirements

THE TELEPHONE advisory committee to Administrator David A. Hamil has given its endorsement to new liberalized equity requirements for Rural Electri-

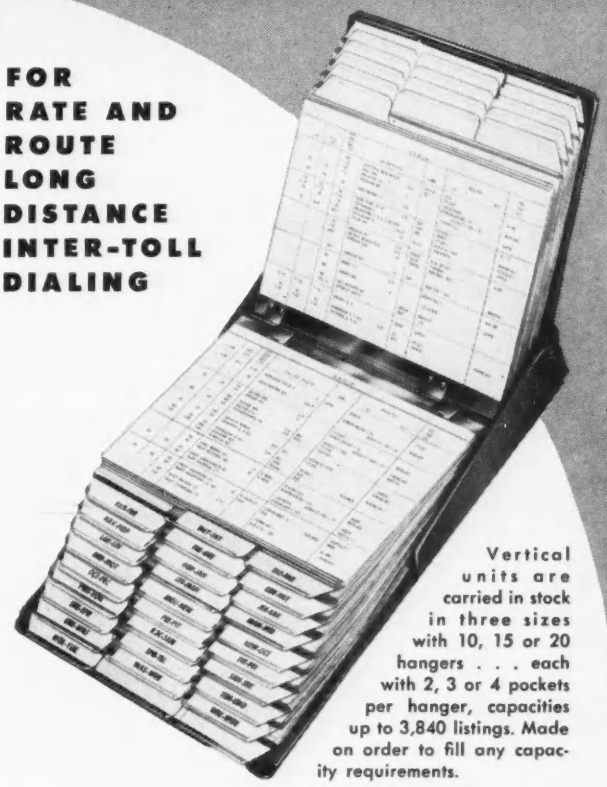
*Please turn to page 26*

ACME VISIBLE

FOR RATE AND ROUTE LONG DISTANCE INTER-TOLL DIALING

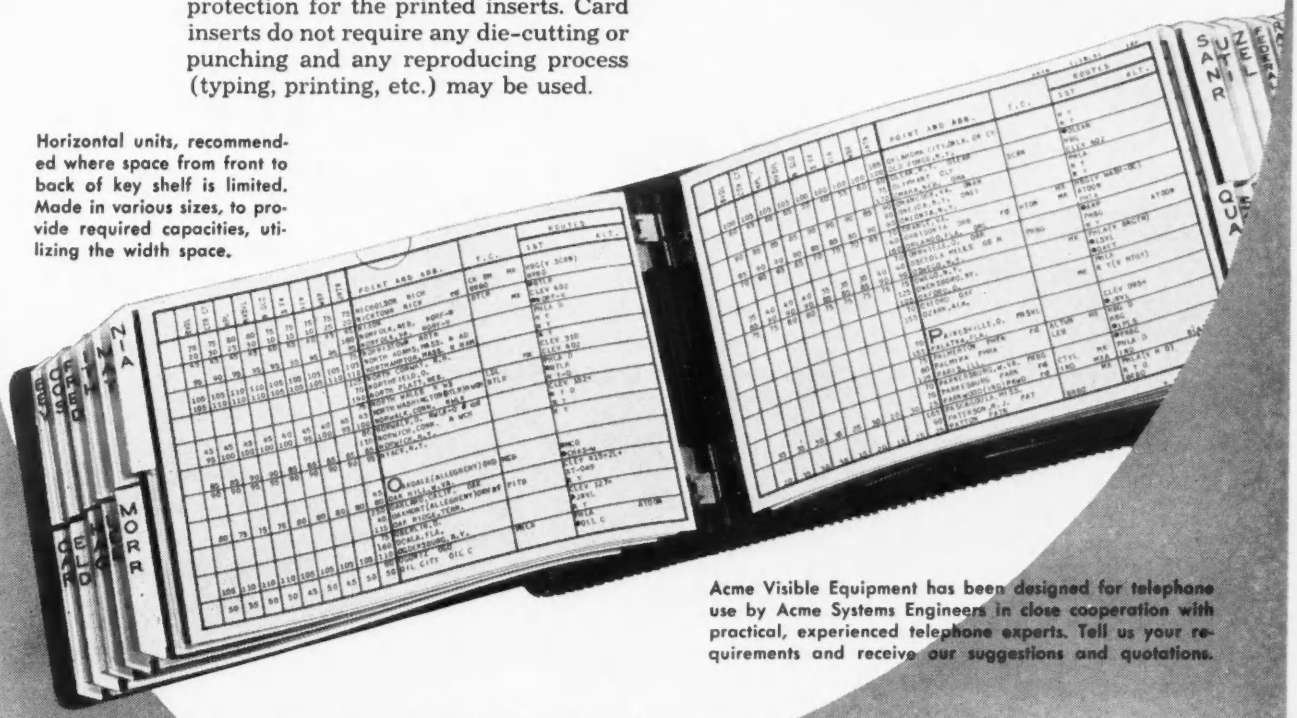
# MULTI-CARD BULLETIN HOLDERS

Developed by Acme, working in connection with telephone engineers, to meet the exacting needs of the telephone industry, to conserve time, reduce cost of operation and improve customer service. They employ the use of clear transparent cellulose acetate pockets which hold card inserts. Suspended on steel hangers with 2, 3 or 4 pockets per hanger, both sides are visible. Made especially for Acme Bulletin Holders, with permanently attached hinges and reinforced index tabs, they provide real protection for the printed inserts. Card inserts do not require any die-cutting or punching and any reproducing process (typing, printing, etc.) may be used.



Vertical units are carried in stock in three sizes with 10, 15 or 20 hangers . . . each with 2, 3 or 4 pockets per hanger, capacities up to 3,840 listings. Made on order to fill any capacity requirements.

Horizontal units, recommended where space from front to back of key shelf is limited. Made in various sizes, to provide required capacities, utilizing the width space.



Acme Visible Equipment has been designed for telephone use by Acme Systems Engineers in close cooperation with practical, experienced telephone experts. Tell us your requirements and receive our suggestions and quotations.

MAIL COUPON TODAY

ACME VISIBLE RECORDS, INC. Telephone System Division, Crozet, Virginia

Please send us illustrated booklet S-457

☐ #1088 on Acme Switchboard Keyshelf Units ☐ #975 on Acme Flexoline

☐ Have representative call. Date_____ Time_____

☐ We are interested in Acme Visible equipment for_____ (KIND OF RECORD) records.

COMPANY_____ ATTENTION_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

BIGGEST NEWS in

New Copperweld

TRADE MARK

COPPER MOLTEN-WELDED TO STEEL

TYPE M

16M
10M
6M

4M
2.2M

New **HIGH-STRENGTH STRAND** *developed by Copperweld research*

New **STREAMLINED TECHNIQUES** *for guy strand production*

New **ECONOMY**--*lower first cost, lowest over-all cost*

The SAME **PROVED DEPENDABILITY AND LONG LIFE....**

# GUY STRAND since 1915...

# GUY STRAND

*at NEW LOW PRICES!*

More than 40 years ago, Copperweld* introduced the first permanently non-rusting, high-strength guy strand. Because of its long, maintenance-free life, that strand has always been lowest in annual cost.

Now, with the new Copperweld Type M Guy Strand, first cost, too, has been reduced all along the line. The new low prices are the result of two recent Copperweld developments: a new, high-strength strand made especially for guy use, and new guy strand production techniques. And you still get the same long life, the same freedom from maintenance, because Type M Guy Strand is still Copperweld—each wire has a thick copper sheath inseparably molten-welded to an alloy steel core.

Copperweld Type M Guy Strand is available in 5 strengths: 2.2M, 4M, 6M, 10M and 16M. Pliable and easy to handle, it can be readily bent, served, moused or clamped. And, because of the molten-weld, the copper covering will not crack, flake or peel.

Our field engineers will be glad to tell you all about this new product, its convenience, and how you benefit from the new low prices.

*Trade Mark

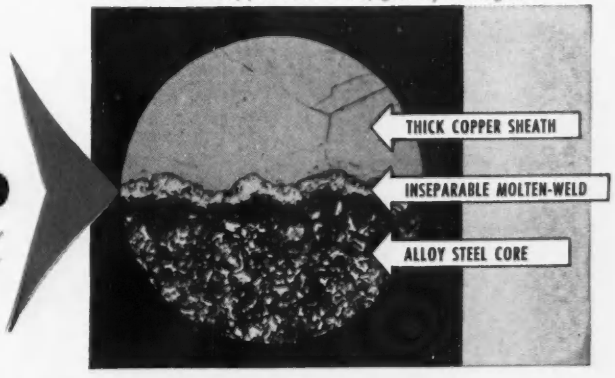
COPPERWELD STEEL COMPANY WIRE AND CABLE DIVISION *Glassport, Pa.*

For Export: COPPERWELD STEEL INTERNATIONAL COMPANY, New York

*...assured by the* **MOLTEN-WELD**

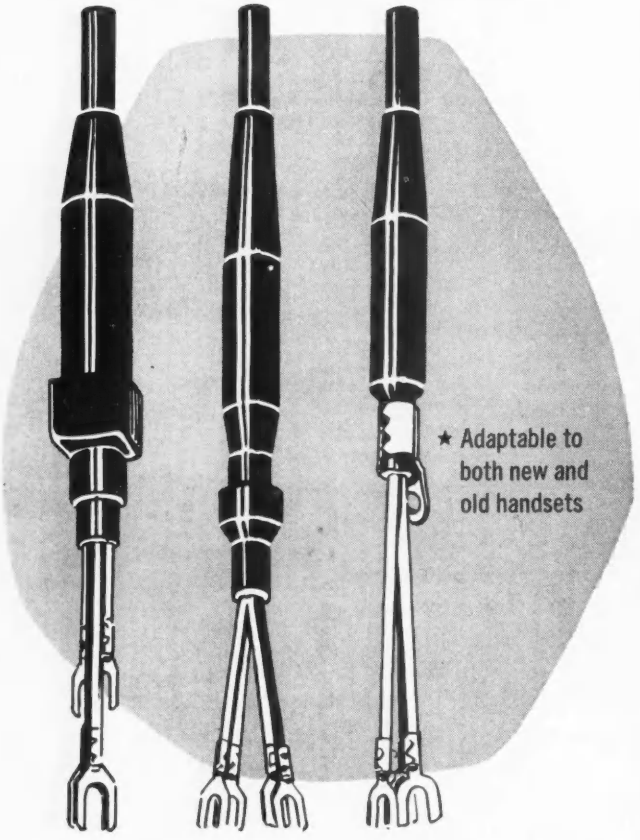
*-exclusive with Copperweld*

weld area of Copperweld Wire, greatly enlarged



# NOW! MOULDED NEOPRENE STRAIN RELIEFS ARE AVAILABLE ON ANY COMMERCIAL

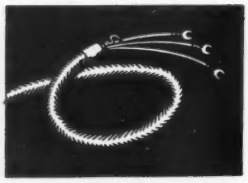
## Neoprene-jacketed Handset Cord




Now moulded neoprene strain reliefs are available on any Commercial neoprene-jacketed cord. These strain reliefs provide strong, reliable buffers against the wear of tugs and pulls. And they add still more years of service to the many you always get from any Commercial Cord . . . cutting "trouble calls" correspondingly. Service-tested, of course, and proved superior . . . but why not make your own tests? We'll be glad to supply samples, if you'll tell us your requirements.

*Write for Catalog and Prices*

**COMMERCIAL CORD**
**& SUPPLY CO., INC.**
CLIFTON SPRINGS, N. Y.
*Phone: Howard 2-5111*



QUALITY CORDS FOR ALL MAKES AND TYPES OF TELEPHONE INSTRUMENTS

# Washington

*(Concluded from page 22)*

fication Administration borrowers with the statement that the proposed changes probably "will expedite the extension of telephone service in rural areas while strengthening loan security for the government."

The proposed policy would require establishment of a 10% net worth floor for all borrowers, while cooperatives would be required to collect $10 membership fees from all new subscribers and to assure REA that 70% of the projected subscriber total had been signed up and paid.

The advisory committee, composed of 17 representatives of cooperative telephone systems, Independent telephone companies, and the Bell System, at a meeting in Washington in late March also received from its engineering subcommittee a report on its study of methods of lowering engineering costs and combating the shortage of engineers declaring that, "The matter of keeping engineering costs as low as possible consistent with sound engineering practices requires that both the owner and engineer understand and strive to fully meet their responsibilities under the terms of the engineering service contract . . . The prompt completion of the subscriber sign-up campaign, the prompt procurement of easements and rights-of-way, the requisitioning of funds in time to meet obligations, are all part of owners' responsibility as spelled out in the contract."

Also discussed at the meeting was an REA program, stemming from numerous requests that REA personnel attend state telephone association and borrowers' meetings which sometimes are held on consecutive weeks, to encourage timing the meetings and avoiding duplication to permit REA to make its personnel available wherever asked but to use available manpower and funds to the best possible advantage. Mr. Hamil said that REA will continue to do everything possible to meet the associations' and other groups' requests, sending the particular persons requested when possible, but urged cooperation in the scheduling of the meetings.

## S. W. Bell Claims Fraud

SOUTHWESTERN Bell Tel. Co., has filed $50,000 suit against National Van Lines, Inc., for alleged use of code system to avoid payment of long distance calls. S. W. Bell charged National Van Lines has defrauded it of $25,000 and asked additional exemplary damages of $25,000. It was charged trucking company used code system under which its drivers made person-to-person calls and collect calls to fictitious names at trucking company's number in Dallas.

S. W. Bell collected $3,000 in smaller suit last year against King Van Lines, Inc., Wichita, Kan. Ed Gossett, general attorney for S. W. Bell, said company will study cases of other suspected violaters and "take action as is necessary to protect our interests."

# Build lines today... FOR TOMORROW

## WITH T-C PRESSURE-TREATED POLES

You build for safety and minimum maintenance in future years when you use T-C pressure-treated poles and cross arms.

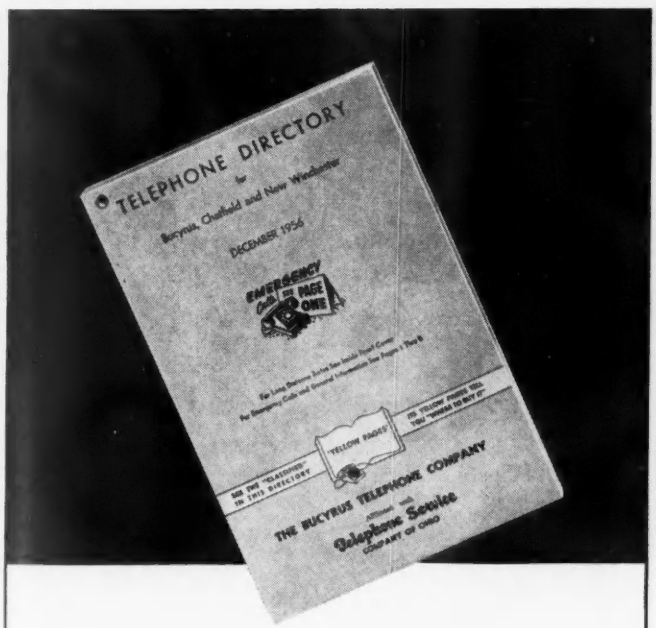
T-C pressure treatment is sure protection against termites and rot. The T-C process, developed and refined over the past 30 years permits the preservative to penetrate deeper and more uniform — assuring long service life. "Build for Tomorrow . . . specify T-C pressure-treated protection.

Distributed by
AUTOMATIC ELECTRIC SALES CORP.
AND LEICH SALES CORP.

TAYLOR-COLQUITT TIMBER CONSERVATION T-C

**TAYLOR - COLQUITT CO.**
**SPARTANBURG, SOUTH CAROLINA**

PLANTS AT SPARTANBURG, SOUTH CAROLINA AND WILMINGTON, NORTH CAROLINA




*A directory for*

*The Bucyrus Telephone Company, Ohio*

*printed by*

**R. R. DONNELLEY & SONS COMPANY**

350 East Twenty-second Street, Chicago 16

# PAGE LASHING WIRE

You get a neat and long-lasting job every time you use PAGE Stainless Steel Lashing Wire! Ideal for lashing conductor cables (lead or neoprene covered) to a strand messenger by Neale or Western Electric Machine. Coils tailored to fit machine specified.

**3 GRADES • EACH IN 2 SIZES (.065 and .045)**

**Type 430 • for use with galvanized messengers**
**Type 302 • for use with stainless messengers**
**Type 316 • for use under severe corrosion conditions**

Furnished six coils in cardboard carton (minimum order).

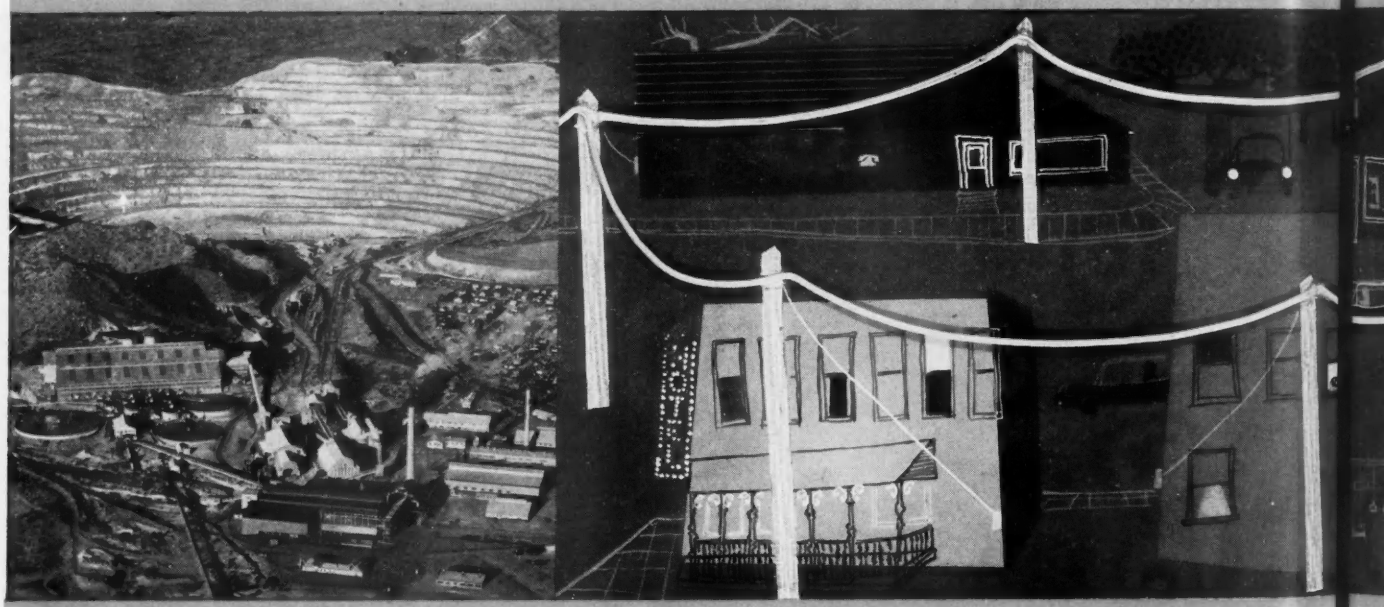
**Other fine-quality products** • You can depend upon PAGE Strand (Stainless or Galvanized Steel) and PAGE Stainless Dead-End Wire • See your Telephone Supply Distributor, or write our Monessen, Pa., office.

**Page Steel and Wire Division**
**AMERICAN CHAIN & CABLE**

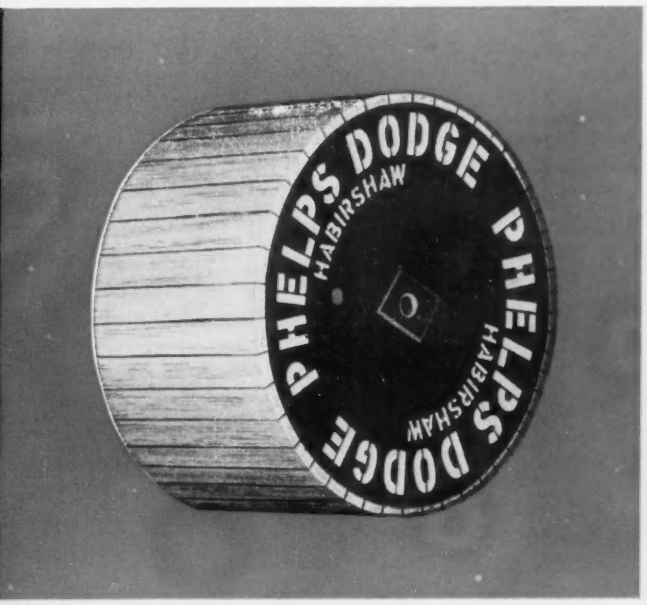
Monessen, Pa., Atlanta, Chicago, Denver, Detroit, Houston, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Bridgeport, Conn.

ACCO
A C C
TRADE MARK

# Now... A Complete Line of Telephone Wire and Cable with the Famous Phelps Dodge "Mine-to-Market" Name!



- Highest grade copper from Phelps Dodge's own open-pit mines.
- Finest insulating materials for long-life service assured by exhaustive laboratory and field tests.
- Careful control of quality throughout fabrication to meet the most exacting specifications.
- Years of manufacturing experience in the communications field.
- Complete line of paper and plastic insulated telephone wire and cable to serve your needs.



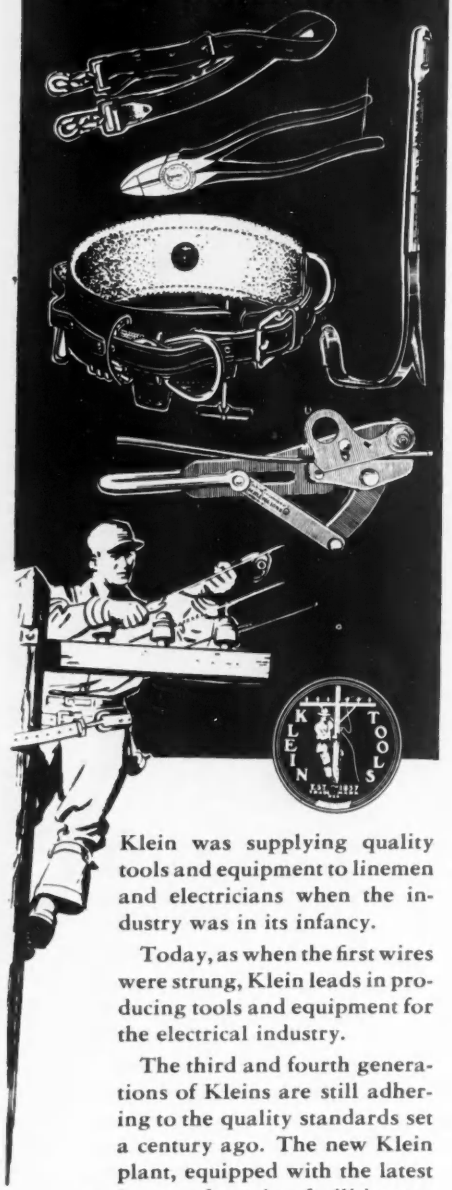

**PHELPS DODGE COPPER PRODUCTS CORPORATION**

PHELPS DODGE COPPER PRODUCTS CORPORATION

**SALES OFFICES:** Atlanta, Birmingham, Ala., Boston, Buffalo, Charlotte, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Fort Wayne, Greensboro, N. C., Houston, Jacksonville, Kansas City, Mo., Los Angeles, Memphis, Milwaukee, Minneapolis, New Orleans, New York, Philadelphia, Pittsburgh, Portland, Ore., Richmond, Rochester, N. Y., San Francisco, St. Louis, Seattle, Washington, D. C.

# KLEIN

FOR GREATER SAFETY, BETTER PERFORMANCE




Klein was supplying quality tools and equipment to linemen and electricians when the industry was in its infancy.

Today, as when the first wires were strung, Klein leads in producing tools and equipment for the electrical industry.

The third and fourth generations of Kleins are still adhering to the quality standards set a century ago. The new Klein plant, equipped with the latest in manufacturing facilities, assures better, safer equipment, wherever power lines or communication lines are strung.

100 years of service to linemen, electricians and industry is back of this new Pocket Tool Guide No. 100. A copy will be sent to you on request, without obligation.

Mathias KLEIN & Sons
Established 1857 — Chicago, Ill., U.S.A.
7200 McCORMICK ROAD • CHICAGO 45, ILLINOIS


# SAFETY CORNER

## Prevention of Electric Shocks

ELECTRIC Shock, is currentrently the number two killer in the Bell System. Five of the 13 fatalities in the Bell System during 1955 were caused by electric shock.

A recent study showed that the majority of the electric shock fatalities in the Bell System during the past 20 years occurred during the spring and summer months. Analysis of these accidents indicated the following reasons for electric shock accidents in warm weather! (A) men wear lighter and fewer clothes; (B) individuals may be less alert; (C) perspiration and wet clothing lowers contact resistance; (D) moisture as a result of frequent rain causes more trouble on plant; (E) lightning storms may develop considerable trouble on lines and equipment on telephone plant and power company plant.

Other reasons for electric shock accidents included: (A) failure to wear rubber gloves when required; (B) failure to recognize unsafe conditions; (C) working too close to power circuits when aloft; and (D) careless behavior around electrical circuits.

After reviewing the facts in previous electric shock fatalities, it was concluded by the investigating committees that the accidents could have been prevented had any one or any combination of the following points been observed:

(A) *Employe should be familiar with specifications* and instructions relative to clearances between telephone plant and light and power facilities on jointly used poles or in crossings and also between telephone plant and other foreign wires, such as fire alarm circuits, etc. He must follow instructions and specifications at all times and not take unsafe short cuts or chances.

(B) *Survey the job* and look over surrounding conditions before starting work. Be extremely alert for broken or fallen foreign wires or other electrical hazards.

(C) *Look for, and report,* hazardous conditions. Do it promptly before it is forgotten. If the condition found makes it unsafe to proceed with the work, contact your supervisor before going ahead with the work.

(D) *Consider all foreign wires and cables,* indoor and outdoor, energized at all times.

(E) *Avoid contact* with exposed vertical light leads when placing safety strap around a pole.

(F) *Never stand on or touch street light fixtures* or any other electric light or power construction on a pole.

(G) *Remember* — 110 *volts can be fatal.* Keep away from it.

(H) *If power lines in the vicinity* are known to be in trouble no repairs shall be made on associated telephone plant until the electric power trouble is cleared or until definite assurance has been obtained that the telephone plant is free from all possible contact with foregin wires.

(I) *Exercise extreme caution* and wear rubber gloves when working with derricks, chain hoists, strand end, etc. near light or power wires.

(J) *Do not permit the arms,*

*legs, or body to contact* foreign wires when wearing rubber gloves.

(K) *If wire, cable, strand, poles* or any other equipment is suspected of being energized, don't grab hold of it in order to be convinced that it is "alive." Report the suspicion as required by standard practices.

(L) *The covering of foreign wires should always be considered* as weatherproofing and not insulation.

(M) *In emergency repair* and during disaster and storm restoral work, always wear rubber gloves before handling open wires.

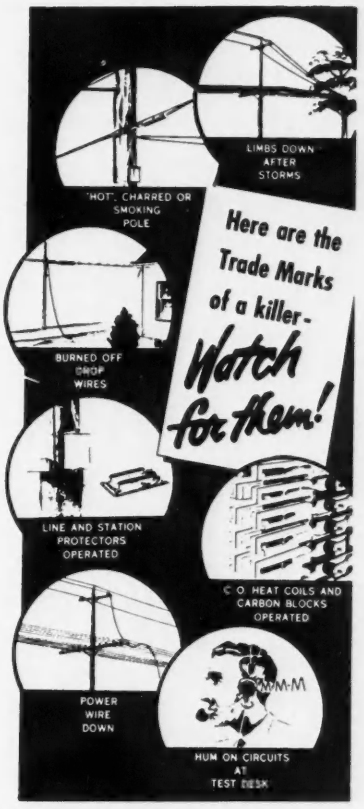
(N) *The handling of electric light power wires,* associated switches or fuses on outside plant by employes is forbidden, except when done to prevent serious injury or loss of life. In such case, rubber gloves shall be used.

(O) *Broken wires of other companies hanging from poles* and other aerial supports shall not be touched, but shall be reported per local instructions.

(P) *Rubber gloves shall be worn when required.* Rubber gloves protect the hands and wrists only, keep all other parts of the body clear of contact with objects and wires which may carry foreign potentials.

(Q) *When using steel fish wire,* all precautions shall be taken to prevent the fish wire from coming in contact with exposed bus bars, light or power wires or associated equipment.

(R) *Employes shall not expose themselves to hazards* from lightning discharge by working on poles or aerial plant during thunder storms which occur in the immediate vicinity of the work location. Past experience indicates that similar danger of exposure does not exist while working in manholes, basements, cable vaults, etc. Exercise good judgment at all times during thunder storms in order to avoid unnecessary exposure to lightning hazards.


LIMBS DOWN AFTER STORMS
"HOT", CHARRED OR SMOKING POLE
Here are the Trade Marks of a killer-
Watch for them!
BURNED OFF DROP WIRES
LINE AND STATION PROTECTORS OPERATED
C. O. HEAT COILS AND CARBON BLOCKS OPERATED
POWER WIRE DOWN
HUM ON CIRCUITS AT TEST DESK

(S) *Tie down communication wires* while they are being worked on in the vicinity of foreign wires, to prevent them from flipping up into the electric or power circuits.

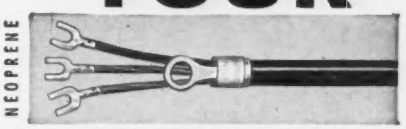
(T) *Collapsible open wire reels and drop wire reels* shall be grounded when running open wires on the same pole line with, or when placing wire parallel to light and power construction, regardless of the voltage involved. Rubber gloves must of course, be worn during these operations.

The soundness of the many points listed above have been tested and proven through the hard school of experience.

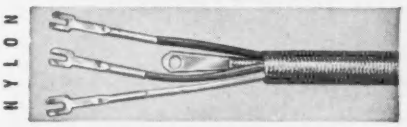
Industry members cannot, of course, relax their efforts for a moment to avoid electric shock, whether the season be winter or summer. But it is certainly good insurance to recognize the fact that the greatest vigilance is needed when the seasonal influence increases the hazards and remember that unsafe acts by men are the prime causes of almost all electric shock accidents.


CORDS BY Runzel

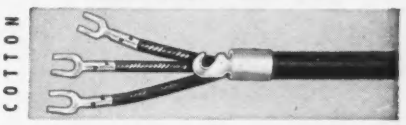
YOUR




BEST




BUY!




***Are you familiar with the features of these fine cords?***

**NEOPRENE** covered cords are a high, serviceable cord, extensively used in a wide variety of services. They are moisture and grease proof . . . easy to keep clean.

**NYLON** covered cords are a relatively new development in telephone cords. Their fine smooth texture makes them the preferred cords for switchboard use. They give long service. Preferred by operators because of their fast, easy handling.

**COTTON** cords are in standard use everywhere. Their fine woven wrap makes them very serviceable for all around purposes.

Take your choice—Neoprene, Nylon or Cotton. They're all high quality cords made in accordance with Runzel high standard of quality. We carry a large stock of cords for every purpose.

***Our geographical location means QUICK SERVICE.***

RUNZEL
Cord and Wire Co.
4723 W. MONTROSE AVE.
CHICAGO 41, ILL.

read all about it!
HOLAN
Mechanical
LADDER
SAFE, FAST,
EASY ON THE OPERATOR
Holan's Series 2200 Ladder elevates to 72°, rotates 360°, is available for ground-to-platform heights up to 32 feet.
Use coupon below for catalog
J.H. HOLAN CORPORATION
4100 WEST 150TH STREET
CLEVELAND 11, OHIO
OTHER PLANTS GRIFFIN, GA., PHOENIX, ARIZONA, BRANTFORD, ONTARIO
To: J. H. Holan Corporation
4100 West 150th Street
Cleveland 11, Ohio
Please send me the technical bulletin describing Holan's Series 2200 Mechanical Ladder.
Name Title
Company
Address
City Zone State

# FREE LITERATURE

**This feature of "Telephone Engineer and Management" helps you get up-to-date technical bulletins, catalogs and literature. To obtain your copies write Reader's Service Department, 7720 N. Sheridan Rd., Chicago 26, Ill.**

## Test Equipment

A NEW six-page bulletin, which covers a representative selection of it's test equipment line, is offered by Simpson Electric Co.

Designated Bulletin No. 2058 (T-E-M) it contains up-to-date listings of test equipment for servicing television, radio, and industrial electrical equipment, as well as refrigeration, air-conditioning, appliances, and heating equipment.

Bulletin No. 2058, (T-E-M) also includes information on three new Simpson tests: the Low-Ohm-Meter, Model 362, featuring greater accuracy from 0.1 to 25 ohms, and utilizing low circuit currents; an *in-circuit* Horizontal Systems Analyzer, Model 382, for checking TV receivers, and a Millivoltmeter, Model 387, for testing safety thermocouples on gas fired equipment.

## Highway Program

"WHAT EXACTLY is the new highway building program that Congress has authorized?" "What will it mean to me?" "Who is going to build the new roads?"

These questions are on the lips of a great many Americans today. A vital part of the road program depends on public knowledge to get the roads built where they are needed. To answer the questions that are being and will be asked about the new road program, Caterpiller Tractor Co. has released a new booklet called, "The Road Ahead," (Form D705) designed to give the public a working knowledge of the future of American highways under this program.

Showing step-by-step how the nation intends to build a new 41,000 mile system of super-highways, "The Road Ahead" explains the how, what and why of the new program. Figures explain how much money each state will receive and for what the money will be used. Illustrations show how the new roads will look when they are finished. "The Road Ahead" explains the citizen's role in creating this new network of safe, modern highways and tells what steps are necessary to get the program under way.

## Selection & Training

TESTS and other materials for use in personnel selection and training are described in the 1957 edition of the Industrial Catalog issued by Science Research Associates, publisher of psychological tests and employe relations materials.

Personnel men will find this catalog helpful in locating materials to use in selecting employes, improving employe performance, and reducing turnover. Included in the catalog are tests of intelligence, interest, and personality, as well as tests for measuring aptitudes and skills. The catalog describes the uses of the SRA Employe Inventory, a morale survey which gives management an objective measure of the feelings employes have about their jobs and the company.

Another helpful personnel aid listed is the Performance Record — a merit-rating program based on the "critical incident" method, by which employes are judged on the basis of actions which are significantly above or below the accepted standard of performance. Training managers will be interested in the reading-improvement materials described as a means of training supervisors to do necessary reading faster and more efficiently.

POWERS *American*

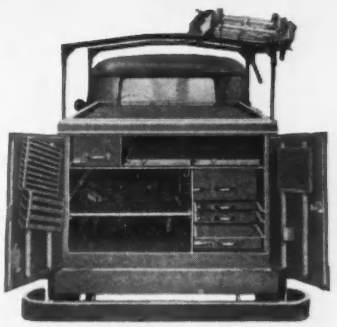
**Presents the SERIES GTI-76 TELEPHONE INSTALLER'S BODY**

# FOR TELEPHONE MEN ONLY

The GTI-76 Body is designed for one-trip telephone installation, maintenance, and general service work. It carries everything needed for routine or emergency jobs . . . in weathertight, pilfer-proof compartments that lock with a single key.

In addition to the seven drawers shown above, standard equipment includes shelves, racks, trays, hooks, and brackets for carrying a complete assortment of supplies.

Want details? A copy of descriptive Bulletin No. 121, with price information, is yours for the asking.



Optional equipment includes overhead rack, with brackets for ladders and/or cross arms; extension ladders; wire reel; and spotlight.

**SERIES 44-CS** carries a completely-equipped workshop for any telephone cable splicing operation.

**SERIES 25-T** has adjustable bins and shelves to carry telephone service tools and materials.

**SERIES 33-T** equipped to carry tools and supplies for telephone installation and service.

**McCABE-POWERS AUTO BODY COMPANY**

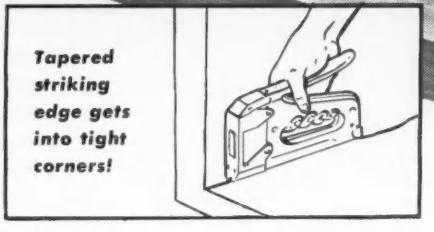
5900 NORTH BROADWAY
ST. LOUIS 15, MISSOURI

•

625 CEDAR STREET
BERKELEY 10, CALIFORNIA

# One Arrow staple gun fastens them all!

**ONLY ARROW'S T-25 STAPLE GUN TAKES 3 STAPLE SIZES TO FASTEN ANY INSIDE OR OUTSIDE WIRE UP TO ¼" DIAMETER!**



*Tapered striking edge gets into tight corners!*

- T-25 staple gun holds ⅜", 7/16", and 9/16" round crown, rust resistant staples, a full ¼" in width.
- Safe! No short circuits possible automatic mechanism stops staple at right height
- Short span handle provides comfortable grip – minimizes fatigue.
- Arrow tackers are jam-proof! Can't jam even when struck against metal! Never any lost time on the job. Fully guaranteed
- No wire sag ever! If staple used doesn't hold wire taut, simply use next shorter leg length to insure firm hold and neat job.
- Staple leg lengths are long enough to insure firm hold in wood, plaster or composition board, etc. Tack-pointed staple legs diverge to give even greater holding power.
- Check staple supply in tacker simply by looking on underside of gun.

T-25 LIST PRICE: **$15.00**

## Try Arrow without obligation!

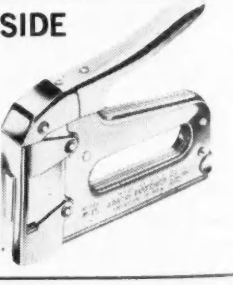
Tackers will be sent an approval for test purposes. Send request to Telephone Division.

*Available at your regular supply house. Priced for volume use!*

## ARROW T-75 FOR ANY INSIDE OR OUTSIDE CABLE UP TO ½" IN DIAMETER!

- T-75 tacker holds 9/16", ⅝" and ⅞" tack-pointed, rosin-coated staples, a full ½" in width.
- Fastens 21 pair inside wiring cable, 26 pair, 12 pair wires, etc.
- Has all above mentioned Arrow features (except tapered head) to insure maximum speed and efficiency of operation!

T-75 LIST PRICE: **$15.00**



**ARROW FASTENER CO. INC.** 1 Junius Street, Brooklyn 12, N. Y.

*100,000 feet of trench in eight months on scattered jobs*—that's what a Barber-Greene ditcher delivered for a Midwest utility company.

# 12 Barber-Greene ditchers travel 800 miles ... dig 100 jobs daily

To speed up house service installation, a Midwest utility, name upon request, bought three Barber-Greene Model 711 Ditchers. These ditchers paid off so well that nine more similar units with variations in boom design were soon added to meet the growing need for fast service trenching in the 250 different communities served by this progressive utility. This fleet of 12 has dug over 625,000 feet of trench in less than a year. As a result of this performance record, four more of these versatile ditchers have been added to the line—boosting the total to 16.

Here are some of the features of the Barber-Greene Model 711 ...

**Unmatched mobility:** Rubber-tired mounting provides fast job-to-job travel. Easy to drive, this Barber-Greene cruises at 45 m.p.h. ... shrinks distances between jobs.

**One-man operation:** Once on the job, the operator merely lowers the boom and starts digging. Hydra-Crowd control permits infinite range of digging speeds from 0-13 feet per min.

**Greater traction:** ... with four-wheel drive. An important feature when digging on slopes and hillsides or on soft, muddy ground that often surrounds new housing projects.

**Saves lawns and curbing:** Low bearing pressure and proper weight distribution offer real protection to lawns, sidewalks and curbing. Low height prevents entanglement with trees.

This is just one of five different Barber-Greene ditchers, each designed to cut costs on a wide variety of jobs.

**Write for literature on the ditcher that saves time on the job and on the road.**

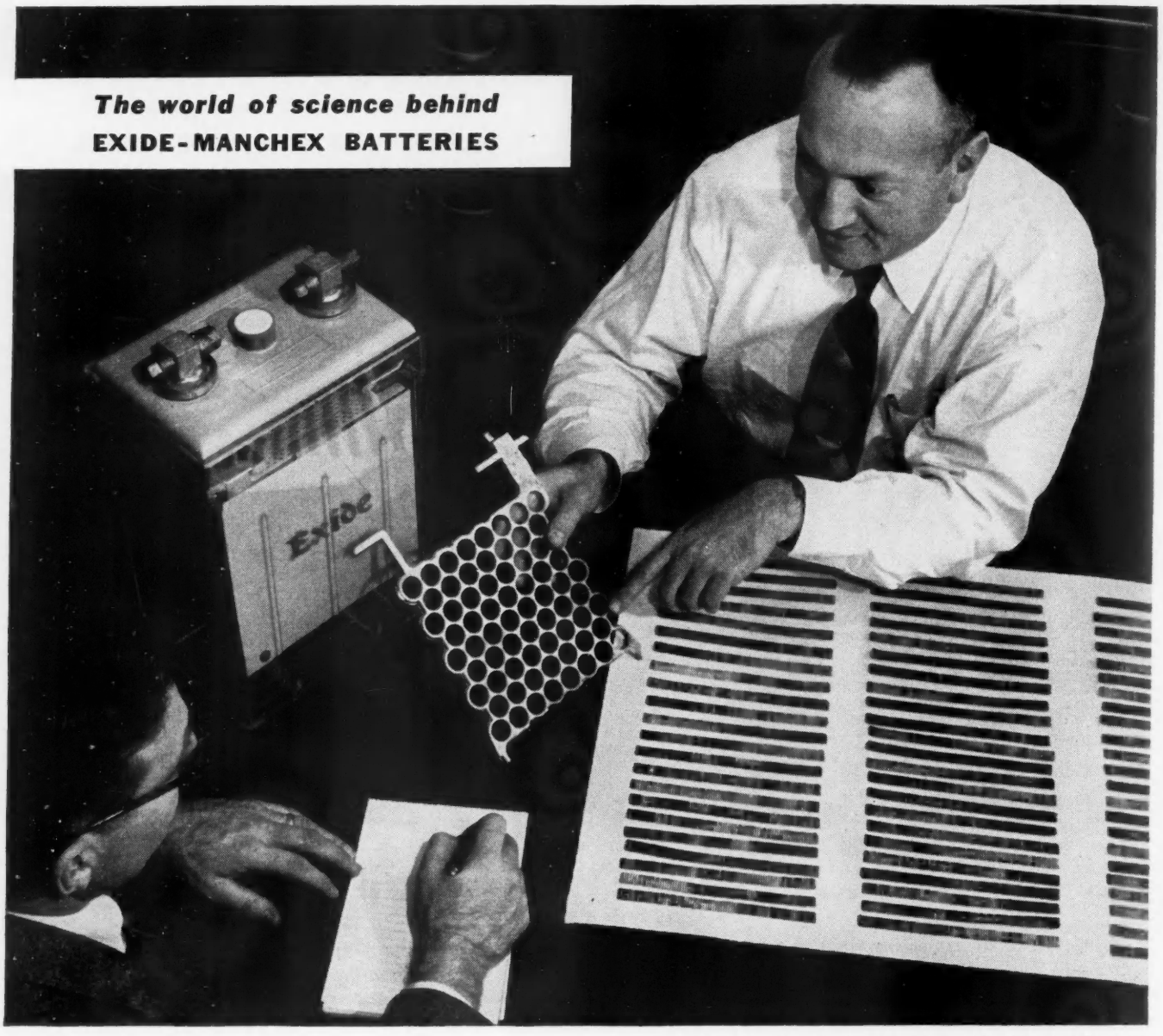
56-18-D

**Barber-Greene** BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS ... LOADERS ... DITCHERS ... ASPHALT PAVING EQUIPMENT

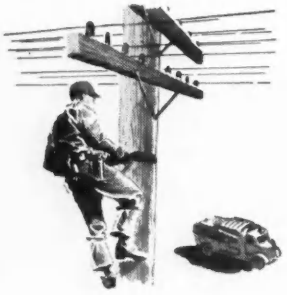
***The world of science behind***
**EXIDE-MANCHEX BATTERIES**




*Being interviewed is Dr. H. J. Strauss, Chief Product Engineer*

## *"Plates last longer because they're 5 times bigger"*

*At the Exide Laboratories*— **Reporter:** Just what are all those lead strips?



**Strauss:** Here we've taken the spiral lead buttons from a single Exide-Manchex positive plate and unrolled them on this table. This total area is actually five times the plate size.

**Reporter:** I see the strips are corrugated on one side. Is that to increase the surface area?

**Strauss:** Yes, and also to give the electrolyte free access into the interior of the spiral buttons.

**Reporter:** How does this feature affect battery performance?

**Strauss:** It means each part of the surface of the positive plate works easier to produce electricity. An Exide-Manchex can coast where many another battery is forced to strain. And the active material lasts years longer than it otherwise would.

**Reporter:** Is this construction available in any other battery?

**Strauss:** No, only in the Exide-Manchex.

**Reporter:** Obviously this is an important feature of the Exide-Manchex Batteries.

**Strauss:** Yes it is, but it's only one of many engineering details that contribute to their long life.

**Note to battery users:** Whenever you order batteries for floating service applications or the equipment that requires such batteries, be sure to specify Exide-Manchex. Write for detailed bulletin. Exide Industrial Division, The Electric Storage Battery Co., Philadelphia 2, Pa.

THE ELECTRIC STORAGE BATTERY COMPANY **Exide**

# EDITORIAL

## "Doing What Others Are Doing"

THIS IS an interesting time of the year for members of the TE&M Staff. Of course the fact that the Spring months are with us is a contributing factor. But Spring is secondary to the interest created by the annual reports we are receiving from the nation's telephone companies. They make this time of year especially interesting.

The 1956 annual reports convince us that the telephone industry *knows how* to provide the kind of service the future will require — and will provide it *if its companies can manage to get the big supply of building dollars the job is going to take.*

Of course these necessary dollars must come from just one source — *from people who have savings to invest.* And people will put their savings into the telephone business *only if telephone earnings are equivalent to those of businesses with which the telephone industry competes for capital.*

As we see it the big problem that could get in the road of the industry meeting the telephone needs of the future is the *low rate of telephone earnings* — a problem that is the outgrowth of inadequate prices for service. Bringing those inadequate prices in line with the general price level in existence today is proving a tough task which many companies have not solved.

The new capital the telephone industry has obtained in recent years has been attracted largely as a result of the industry's reputation with investors — a reputation built in years when its earnings compared favorably with those of other capital-seeking companies, and we know the reputation a telephone company is building today will determine its capital attracting ability in the years ahead.

Right at this point the problem of inadequate rates really stands out. It jumps into the spotlight because:— (1) Interest rates are rising; (2) investors are asking and getting a better wage for their dollars; (3) the investment money market is presently a "tight" market, (4) people with savings are looking more and more closely at a company's level of earnings in deciding where to invest their money; and (5) telephone earnings are too far below those of other leading businesses.

This gap must be narrowed if the telephone industry is to be assured of the new capital the service will need.

Narrowing that gap is a problem. Many companies have been working at the problem of *low earnings for a long time.*

They're running the business efficiently. They're making use of new ways and new kinds of equipment in an effort to keep costs down. Through merchandising and sales they're increasing the number of incoming dollars.

These efforts help — but the big reason for low earnings is the fact that telephone price changes have been too small. A few minutes with any one of the Annual Reports in our reference file will prove the truth of that statement and also prove that this need to improve telephone earnings has a very great meaning to the kind and amount of telephone service the industry can furnish.

Time has proved that the telephone industry has the ability and the technical know-how to keep on improving *its* services.

We know the industry can put to work the present developments of telephone research to bring the kind of service the country needs.

In fact, the things the telephone industry is trying to do are so sound that the public and regulatory commissions should recognize they are in the best interest of everyone.

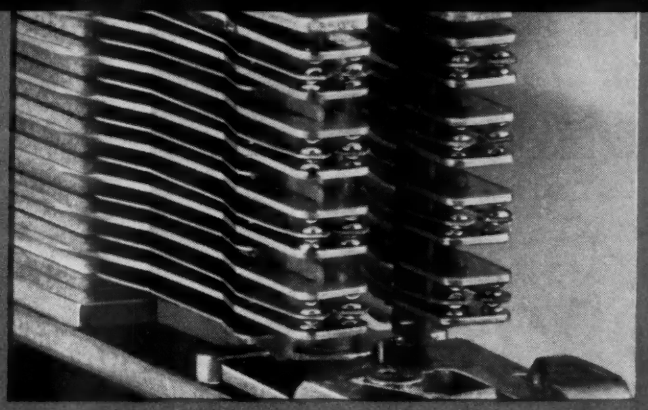
At the same time the public and the regulatory commissions should recognize that the big problem of meeting the telephone needs of the future is the low rate of telephone earnings.

Once that problem is understood by all concerned we know our Spring reading will be even more interesting. It should be for if the problem is promptly recognized and acted upon, the era of inadequate rates will end and the earnings will improve.

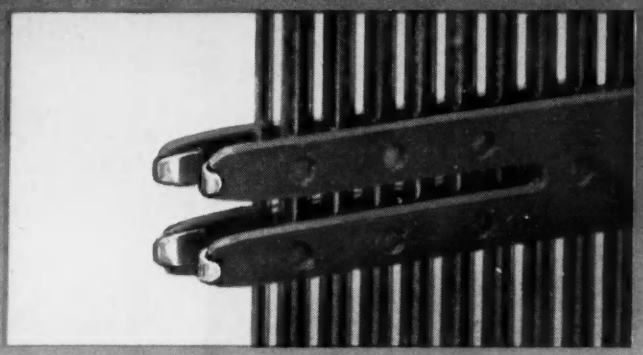
When that happens Annual reports are bound to be more interesting, for the figures will prove the industry is at last doing what other businesses are doing — *earning a fair profit!*

*(The foregoing editorial, although copyrighted, may be reprinted in whole or in part without charge, provided credit is given this publication and a copy of such reproduction is filed with this publication. This legend need not appear on the publication.)*

TWIN C



Twin contacts provide positive insurance of reliable operation and long life in relays (above) and switch wipers (below)



# CONTACTS

Two pilots in the cabin of an airliner . . . a second man in a cross-country truck . . . a fireman to spell a Diesel engineer—any operation is more reliable when *two* men are in control. And the same "insurance" applies to the transmission of telephone conversations.

That's one reason why Stromberg-Carlson has standardized on TWIN contacts throughout its XY® Dial System—on switch wipers and relay springs. Laboratory tests have proved twin contacts to be over 22 times as reliable as singles.

XY Dial Systems are the *only* step-by-step system with this feature of reliability and service economy.

Add other XY Dial System advantages—dust-free vertical wire banks; universal use of the XY step-by-step switch as finder, selector or connector; space-saving "double-sided" placement of switches and circuit plates—and you'll begin to see why independent companies have made XY Dial Systems America's Number One choice.

S-C STROMBERG-CARLSON

**STROMBERG-CARLSON COMPANY**

A DIVISION OF GENERAL DYNAMICS CORPORATION

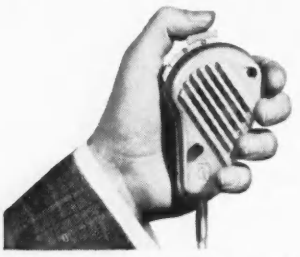
**Sales Offices: Atlanta 5, Chicago 5, Kansas City 5, Rochester 3, San Francisco**

GD GENERAL DYNAMICS

The new

# Comptometer® Commander

## "Makes Dictation Easy as Talking to an Old Friend"



All controls are in the palm of your hand... with UNIMATIC REMOTE CONTROL MICROPHONE

- Dictate
- Listen
- Unlimited Review
- Erase unwanted words
- Mark end of letter... electronically
- Use same machine for dictation, transcription
- Lifetime belt—never wears out

## Try it FREE in your office

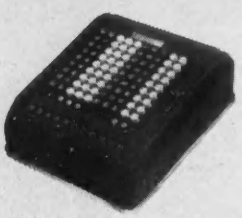
Through electronic magic the portable Comptometer COMMANDER puts perfect letters on your desk in half the time, because it automatically erases unwanted words and phrases as you redictate your message. You hand your secretary perfect dictation every time. Yet, dictation is as easy as talking to an old friend because ALL controls are in the palm of your hand.

The same machine serves as a transcriber...it's as easy to transcribe as to listen, because, with perfect dictation, there's no need for time-wasting, error-breeding pre-editing.

Best of all, the Comptometer COMMANDER actually pays for itself over and over. The mailable Lifetime guaranteed Erase-O-Matic belt wipes clean, electronically, in a second, ready for re-use thousands of times. No recurring cost for belts, discs, or cylinders.

Learn how easy dictation can be—how anyone can turn out a far greater volume of perfect letters easier, faster! Want proof? Mail the coupon!

Comptometer — BETTER PRODUCTS / TO BETTER BUSINESS



COMPTOMETER—World's fastest way to figure. Try it FREE on your work in your office. Use coupon.

Comptometer COMPTOGRAPH "202" —No lost hand motion. More fine features than any other 10-key machine. Try it FREE—use coupon.

**Felt & Tarrant Mfg. Co.**
1738 N. Paulina St., Chicago 22, Ill.
In Canada: Canadian Comptometer, Ltd.
501 Yonge St., Toronto 5, Canada

- ☐ Arrange a FREE office trial for me on:
- ☐ Send me literature on:
- ☐ Comptometer COMMANDER
- ☐ COMPTOMETER Adding-calculating Machine
- ☐ Comptometer COMPTOGRAPH "202"

Name_____
Firm_____
Address_____
City_____ Zone____ State_____

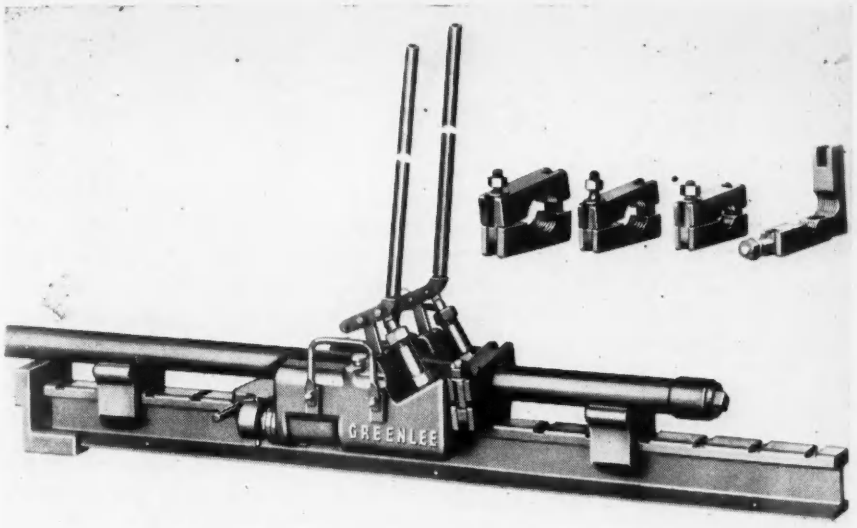



FIG. ONE:—Hydraulic pipe pusher for pushing ¾-inch to 4-inch pipe.

FIG. TWO:—Illustrating hand operation of hydraulic pipe pusher.

# *Modern Construction Tools*

# Save Workers' Time-Reduce Labor Costs

By MYRLE SHAFER

**THE MEN who do the outside plant work know that the primary purpose of a tool is to provide a mechanical aid for getting a needed job done. This article describes many tried and tested tools — some so new they have not been placed on the market.**

AS IN ANY line of business, tools are designed to save time and to reduce effort in doing a specific job. Telephone men who do a large share of outside plant work know that the primary purpose of a tool is to provide a mechanical aid in getting a needed job done. There is an amazing variety of tools manufactured for construction men, practically all of them developed in the field to meet specific needs.

A tool must not be merely a gadget which seems to do the job and yet actually increases the cost. Tools should be selected with care. A new and untried tool should be given a thorough study and trial in the field after which, if it proves satisfactory, additional tools of the same kind may be purchased for other work crews. The tools described in this article have been carefully tried and are considered to be useful for telephone construction work. The article also describes a few tools that have been worked out in the field and may not have been placed on the market as yet.

### *Pipe Pushing Machines*

PIPE PUSHING machines save time and effort in pushing pipe and conduit under embankments and streets where telephone lines must be placed underground. This method avoids the expense of removing or replacing pavement and with this equipment, it is an easy matter to push pipe accurately.

The use of pipe pushing machines is not a new idea, since mechanical type pipe pushers have been employed for many years, working through handles operating ratchet device on a rack. *Figure* 1 illustrates a machine that operates on the hydraulic principle which provides considerable power to easily drive pipe. Such a unit functions as shown in *Figure* 2 by means of handles operating a hydraulic ram to push the pipe. However, high priced labor can be saved by employing a power pump as illustrated in *Figure* 3.

The pipe pusher shown in *Figure* 2 is capable of pushing up to four-inch pipe and can handle pipe as small as ¾ inch. It has six operating speeds with pushing pressures ranging from 6,500 to 40,000 pounds. The power unit travels along notched steel base of 5½ to 8½ foot lengths, enabling pushing from four to seven feet between changes of the pipe clamps.

The power pump illustrated is a double piston single-valve high-pressure pump for facilitating the operation of the hydraulic pusher on tough

**FIG. THREE:—Use of hydraulic power pump to operate hydraulic pipe pusher. This unit is pushing 3-inch conduit.**

pushing jobs. This pump has a 4½ HP gasoline engine. When powered with this pump and operating under normal conditions, this pushing machine will advance at a speed of two feet per minute, requiring only one operator for this job. Beyond saving high labor costs, the power pump with gasoline engine is usually preferred because of the lack of electrical power in many locations where pipe pushing work is being handled.

### *Hydraulic Pole Jack*

HYDRAULICALLY-actuated pole jacks save about one-half the time and labor required for removing poles by other methods and prevents possible damage to the truck and derrick in attempting to loosen the poles and pull them out. It furnishes a powerful steady pull needed for removing deeply embedded poles without digging. A typical hydraulic pole jack is illustrated in *Figure* 4.

The pole puller illustrated is designed for use with any truck equipped with hydraulic pump. The unit is a double acting hydraulic ram fastened to a detachable base plate by a hinge connection which permits the ram to tilt with the pole being removed. Oil pressure, controlled by a four-way valve installed on the truck body, is transmitted from the pump by two 15 foot lengths of quick-coupling hose.

With pressure at 1500 PSI (pounds per square inch) maximum lifting capacity is 4200 pounds. It is stated that an idling engine will furnish sufficient power to pull the most stubborn poles. The illustration shows how the pole puller is employed with a chain to pull up a pole, and also indicates that one man can easily carry the jack. The ram weighs approximately 82 pounds and the base 24 pounds.

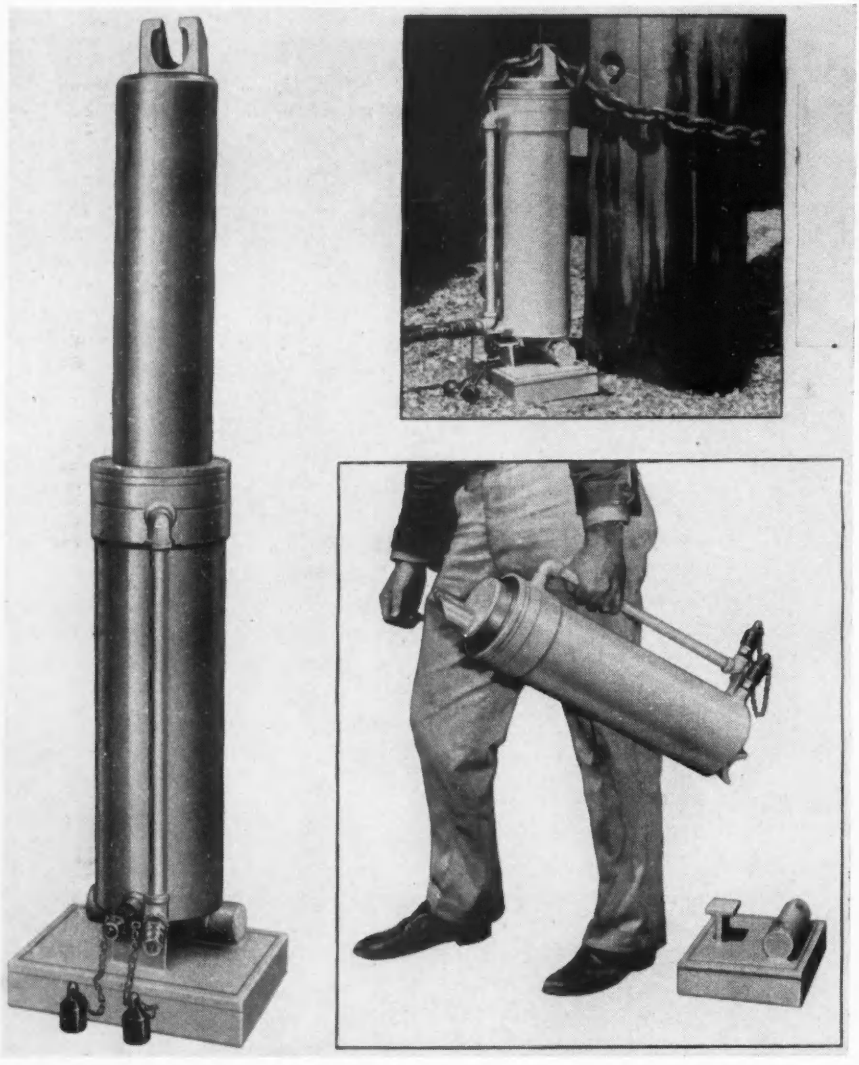


**FIG. FOUR:—Left — Portable hydraulic jack. (Upper Right) Portable hydraulic jack pulling up pole. (Lower Left) Illustrating portability of hydraulic pole jack.**

### *Measuring Tool for Use on Open Wire Lines*

THE NEW telescopic fiber glass pole has been found very convenient for measuring clearances of telephone wires and cable from ground. This tool can also be used for oscillating line wires in determining proper sag. The sag tester shown in *Figure* 5 telescopes from 4½ feet to 20 feet and weighs less than two pounds. This tool is made of non-conductive fiber glass and is capable of withstanding high voltages so it can be safely used in locations of exposure to high voltage line as shown in *Figure* 6.

### *New Tool for Slitting Lead Sleeves*

THE COMMON practice when it is necessary to split a lead sleeve is to use a hack saw or piano wire. This method is awkward and hazardous and may result in an unsatisfactory job. The Sleevemaster illustrated in *Figure* 7 is claimed to produce a perfectly straight cut with a smooth parallel face. When the ends of the sleeve are drawn back together over the cable splice, the two faces meet perfectly producing a tight joint that will not leak molten solder onto the splice.

Splitting sleeves with the Sleevemaster produces a small bead on the inside of the sleeve increasing the thickness of the sleeve at the joint by approximately 50 per cent which

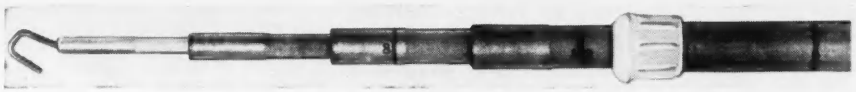


**FIG. FIVE:—Fiber glass measuring stick with hook for hanging on line wire. Note one-foot markings from top down.**

is considered to be desirable especially with thin wall sleeves. In cases where this bead is not wanted, it can be removed with a shave hook.

The Sleevemaster is designed to slit sleeves as large as 3 inch in diameter. This will take care of about 90 per cent of lead sleeves in present use which are quite difficult to split in the ordinary way, due to their small diameter. This tool will split sleeves up to 24 inches in length; however, a longer chain can be ordered special for splitting longer sleeves.

After the splitting function is performed, the Sleevemaster may be used to constrict the sleeve for soldering as illustrated in *Figure* 8.

The Sleevemaster is furnished complete with mounting base and screws. This base may be mounted in any solid surface such as the splicer's truck, trailer, or tool box. The unit as pictured is readily removed from the base for storage or for hand use. The base section is permanently mounted.

### *Brush Chipper Reduces Tree Trimming Costs*

IMPROVED efficiency of tree trimming crews accompanied by better public relations have resulted from the use of mechanical brush chippers for disposal of brush from pruning operations. Studies indicate that on the average job, over 20 per cent of tree trimming labor involves the handling of brush. In some areas where long trips are required to transport the brush to dumps or other disposal points the handling time may be increased twice as much.

The trailer mounted type of brush chipper illustrated in *Figure* 9 is hauled behind a regular tree-trimming truck which has a hopper to catch and store the chips. With this arrangement, brush can be handled in much less time than by loading on a truck and hauling away from the job.

Previously, a tree-trimming crew might have to make two trips a day to haul accumulated brush to the dump; whereas, with the brush chipper and hopper arrangement only one trip is needed. One company has devised an enclosed dump truck to accumulate the chips and at the same time provide space for carrying personnel and tools for line clearance work. This dump truck saves time in transporting and disposing of wood chips at dump sites.

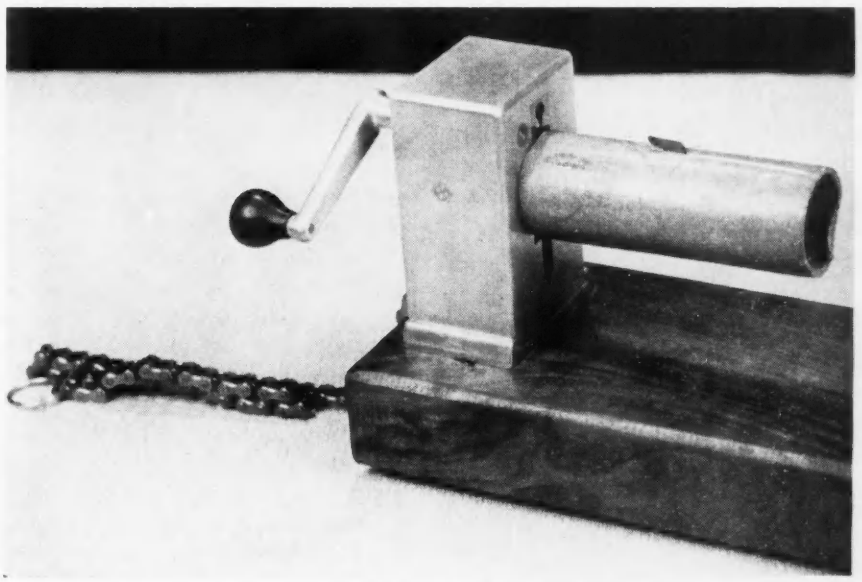


**FIG. SEVEN:—Sleevemaster in process of splitting a lead sleeve.**

**FIG. SIX:—Fiber glass stick in use.**

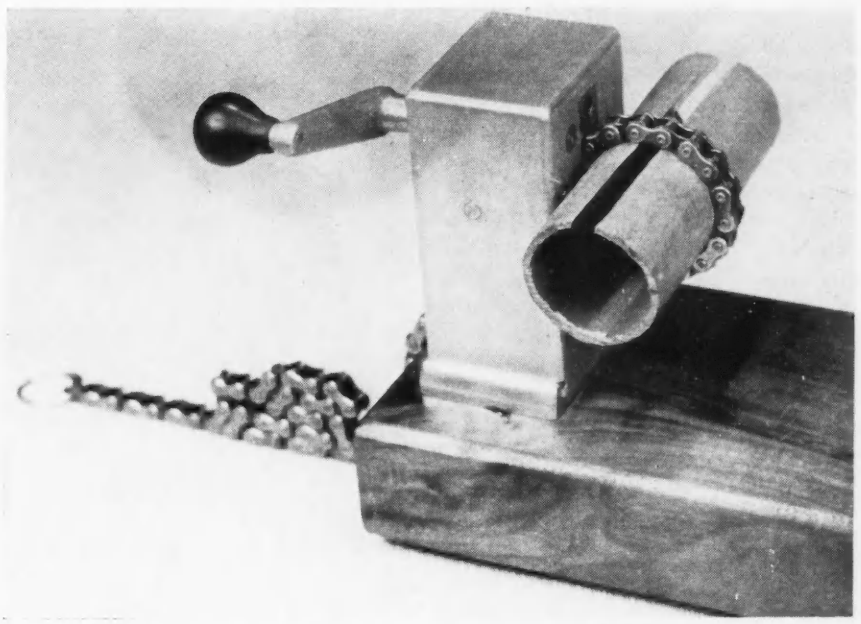


**FIG. EIGHT:—Sleevemaster in use to close a previously split sleeve.**

In rural districts it is not necessary in many cases to transport the chips to a dump area but rather they can be blown out on the roadside or right of way, saving hauling costs. When handled in this manner, the chips serve as an organic ground cover that retards weed growth. It is interesting to note that the chips can be used to advantage by farmers, orchardists, nurserymen and poultry raisers and they may be offered for this purpose at wayside farms. The farmers can use the chips for mulching and composting, and the poultry men find them excellent for bedding purposes.

*Figure* 10 illustrates a brush chipper mounted on a truck. Several

**FIG. TEN:—Truck mounted brush chipper blowing chips out on right of way.**

models of this machine are available. The smallest will handle 4½ inch diameter limbs and 6 inch wide slabs of wood and the largest, limbs of 7 inches in diameter and slabs 14½ inches wide. The machines illustrated feature a safety spring built into the machine which enables larger-size limbs to be handled without extra power, assuring smooth, efficient operation. The powerful cutter blades can be removed for sharpening and an extra set of cutting blades is furnished with each cutter unit for use while the other cutter blades are being sharpened.

### *Utility Trucks Save Time On Construction Jobs*

AT LEAST one telephone company has adopted one method employed by many power companies to save time in handling materials and transporting men on construction jobs. In this method an auxiliary pick-up truck is assigned to accompany a regular construction truck of the 2-ton or heavier type. The

**FIG. NINE:—Trailer type brush chipper in operation.**

pick-up truck is usually of the ½ ton type much used for combinationmen's or installer's trucks and may be provided with a body similar to that used on combinationmen's trucks for carrying small parts and tools.

Such trucks save loading time. The small trucks can be loaded with miscellaneous materials which are carried in the compartment body so that the large trucks need not carry so much material for the job. Usually the material is loaded on the small trucks while the construction truck is picking up the poles, crossarms, and heavy hardware for the job. This is especially helpful when the pole yard is located at a distance from the warehouse. Small jobs occuring during the construction project can be handled efficiently by several men, with the utility truck providing the required mobility. The men are assigned out along the pole line with perhaps one or two tying line wire to insulators, and the rest working on the ground in other sections of the line. The utility truck has been found to be especially convenient where the construction crew is working in congested districts and the construction truck would be awkward in heavy traffic.

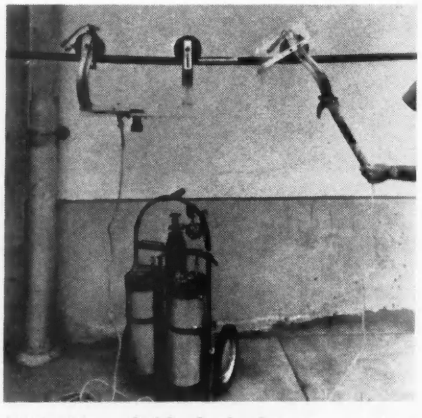


**FIG. 11:—Cable leak detector equipment. Double roller applicator type is shown on the left and the single roller applicator on the right. The portable two-wheeled truck carries the solution tanks and the compressed air bottle supplying the pressure. Note the plastic tubing for conducting the solution to the spray nozzles.**

### *Cable Leak Detector Equipment*

WHENEVER A leak occurs in a telephone aerial cable that is maintained under gas pressure, the usual testing procedure is to take pressure readings at certain points along the cable. Where the lowest reading occurs, the cable is swabbed with a soap solution until the leak makes its presence known by producing a mass of bubbles at the cable sheath opening.

This procedure requires the cable man to ride the cable messenger and apply liquid soap from a can or bucket with a brush as he proceeds along the cable. As may be expected, this is a messy and tedious process.

The leak detector equipment illustrated in *Figure* 11 makes riding of the cable unnecessary and saves considerable time in locating the leak. The equipment consists of a tank filled with soap solution and a roller with twin nozzles adjusted to spray the entire periphery of the cable as indicated in Figure 11.

The roller is guided along the messenger by means of a long pole consisting of tree trimmer handles coupeld together. The solution flows up plastic tubing under pressure from the tank and sprays out from the twin nozzles onto the cable. When the roller passes over an opening in the cable sheath from which gas is escap-

ing, a mass of bubbles begins to form, and develops into a large cluster that hangs down from the cable, indicating the location of the leak.

*Figure* 11 shows a single and a double wheel applicator and a portable two-wheeled truck with solution tanks. The single wheel applicator is intended for use where aerial cables are easily accessible and are not placed over 18 feet from the ground. It is provided with a wind spray shield for successful operation in windy and open areas. The two-wheel type is designed for use on high cables and where the single wheel applicator cannot be employed on account of obstructions along the right of way, such as trees or buildings. A pulling line is used on the double wheel applicator.


**CREDITS**

**The author thanks the following companies for providing illustrations for this article:**

**Figures 1, 2, and 3 — Greenlee Tool Co.; Figure 4 — McCabe Powers Auto Body Co.; Figures 5 and 6 — Orchard Industries Inc.; Figures 7 and 8 — Cable Spinning Equipment Co.; Figures 9 and 10 — Fitchburg Engineering Corp.; Figures 11 and 12 — S & G Manufacturing Co.; Figures 13, 14, 15 and 16 — Electroline Co.; Figures 21 and 22 — Auburn Machine Works, Inc.**


Dual solution tanks are mounted on a portable two-wheeled truck with an air pressure bottle for supplying a regulated pressure in the solution tanks. This pressure is adjusted to compensate for lower or higher levels to which the solution must travel to reach the roller nozzles. A special liquid soap is added to water in the tanks to produce a solution of the desired quality for positive detection of small leaks.

**FIG. 12:—Sprayer tank for carrying on back in cable leak detection work where two wheeled truck would be difficult to use as on rough terrain.**

If preferred, a single portable tank with pump as shown in Figure 12 may be employed. This tank is carried on the back of a helper accompanying the cableman who pushes or pulls the roller along the cable.

The cable leak detection method outlined is applicable to cables maintained under dry or gas pressure or non-pressurized cables with gas or dehydrated air applied temporarily to locate the leak.

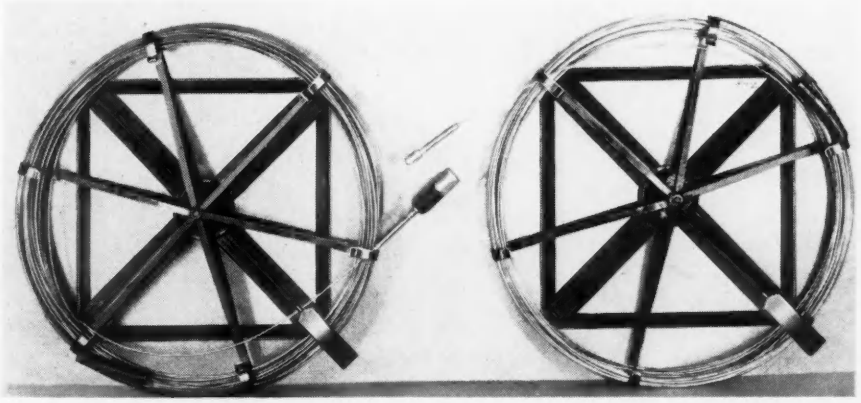


**FIG. 13:—Showing the small storage space required for the two standard reels of steel rodding lines. The reel at left has the pick-up fitting and the one at right, the leader fitting.**

### *Equipment for Rodding Of Conduit Ducts*

CONDUIT ducts for telephone cable are not always easily rodded for a pulling line to bring cable into the duct, because of obstructions or bends that will not pass lengths of wood rods.

The steel duct rodding equipment shown in *Figures* 13 *and* 14 is claimed to cost only half as much as other types of rodding equipment and to reduce maintenance expenses by 75 per cent. The use of this equipment is said to eliminate the necessity of leaving pulling wires in ducts for future use in pulling in cables, and which must be pulled out for inspection at intervals.

The equipment consists of oil-tempered spring steel wire of any desired length. To one end is attached the pick-up fitting. To the other end is attached the leader fitting. The pick-up fitting is made of tubular steel, in sizes to fit various sizes of ducts and is equipped with spring-bound steel fingers to admit the leader fitting. When the leader enters the pick-up fitting, the steel fingers lock the connection securely and make one continuous rod which can be pulled or pushed from either end. The leader is provided with a hole for attaching the pull wire. Connector fittings are detachable to permit attachment of mandrels, swabs or other special tools for use in cleaning ducts. Flexibility of the equipment is indicated by the installation example in *Figure* 15.

**FIG. 14:—The steel rodding equipment in use.**

The standard rodding equipment illustrated consists of the following items: one reel with 400 feet of wire, one reel with 300 feet of wire, one pick-up unit for round or square

duct, four leader units, one tool for separating pick-up and leader units, and one hand feeding tool.

The rods are marked off every 25 feet, making it easy to locate a break in the duct. The rod is simply pulled out and laid on the ground over the duct line. It will indicate exactly where to excavate to remedy the trouble.

### *Portable Spray Units*

MANY PORTABLE spray units have been developed for chemical brush control along telephone right of ways. It has been found that elaborate machines with large tanks are not actually essential for the spraying work. It is considered more economical to employ three-quarter ton or larger trucks which may be a combinationman's or cable splicers' truck, adapted temporarily for the purpose.

This unit makes use of a low pressure pump driven by the main auxiliary belt from the automobile generator and operated by magneto clutch. The spray mixer is contained in steel 50-gallon drums carried in the back of the truck. A portable hose rack is mounted on the rear of the truck and employed to carry the hose which may be 25 to 50 feet long as needed for reaching to the far side of the telephone right of way. When required, the low-pressure pump, drums, and portable rack can be removed from the truck and the truck can be used for its regular work.

The spray mixture is a standard 2, 4, D and 2, 4, 5, T herbicide combination in fuel oil.

For economical operation, the regular maintenance man may be assigned to operate the truck equipment while two temporary workers hired for the work are assigned to handle the spray nozzle.

After two or three major spraying projects, it will be found that unwanted right of way plant growths have been reduced to occasional sprouts. The spraying outfit may then be put away or assigned elsewhere. To take care of the occasional small growths, a handsprayer may be provided on each combinationman's truck.

The men are instructed to spray each small sprout detected growing on the right of ways passed by in the course of their daily work. The same kind of spray mixture is employed which is applied as a basal bark spray on the sprouts for a distance of about one foot above ground line.

*Figures* 17 *and* 18 illustrate a suggested mounting rack for the hand sprayer. This rack is located on the running board of the vehicle on the left side. The sprayer is easily removed for carrying to the spraying location and then returned to the rack. The use of a canvas hood on the sprayer is recommended to keep

*Please turn to page 86*

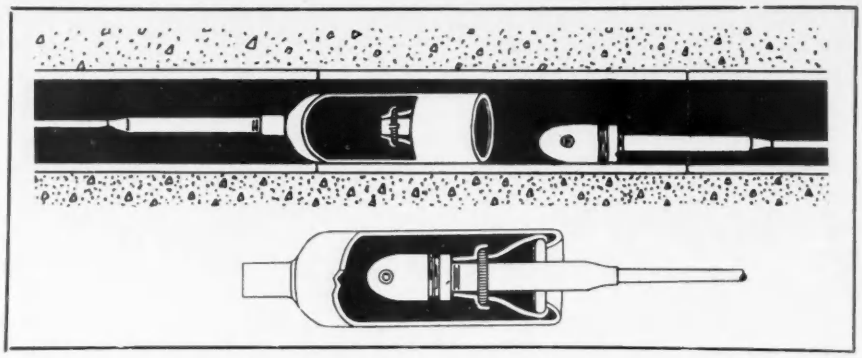


**FIG. 16:—Pick-up and leader units of steel rodding before and after locking together. Leader locks in pick-up for either push or pull.**

**FIG. 17:—Hand sprayer in rack mounted on running board of combinationman's truck.**

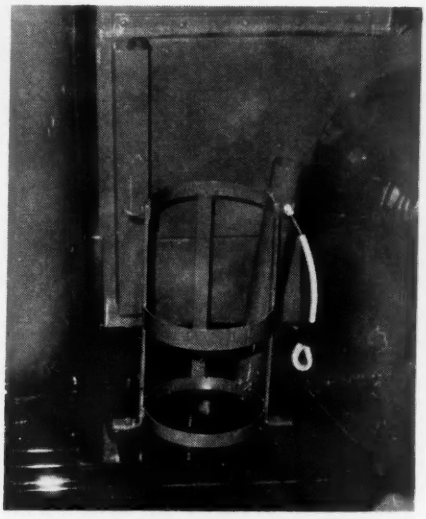


**FIG. 18:—Details of hand sprayer rack. Tube attached to rack is for sprayer wand and nozzle (with ¼" copper drip tube at bottom and protruding through running board). Strap is ⅜" airplane rubber shock cord. Base is ½" exterior ply wood suitably finished.**

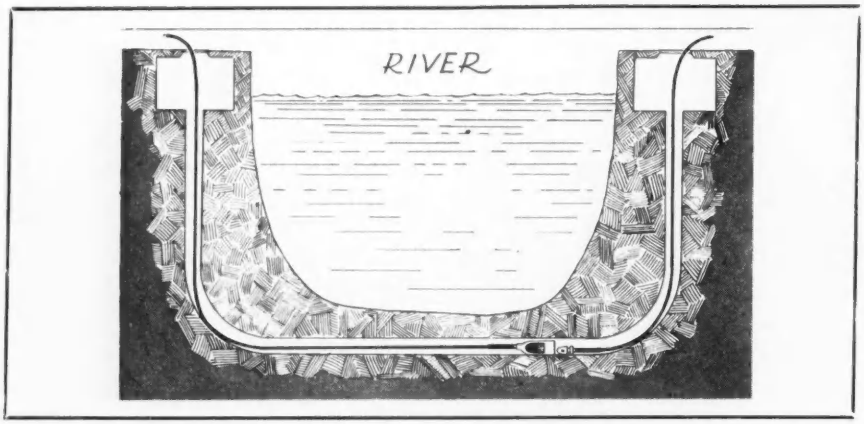
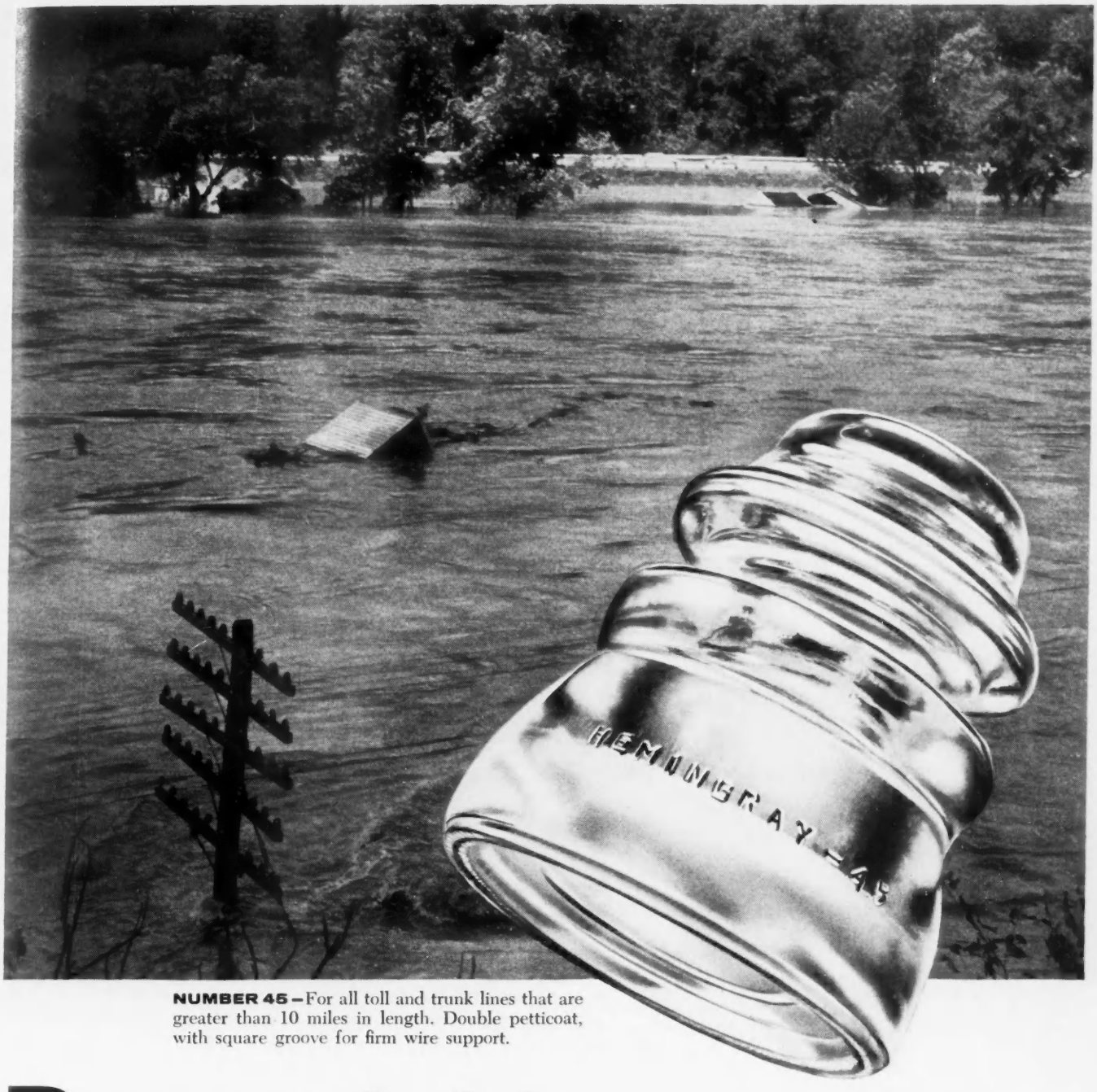



**FIG. 15:—Cross section view of a river crossing of a duct line. The steel rodding is being fed through a duct of total length of over 700 feet. The steel rod feeds easily around bends as shown. Note leader approaching pick-up unit and which locks together as shown in Figure 16.**




**NUMBER 45**—For all toll and trunk lines that are greater than 10 miles in length. Double petticoat, with square groove for firm wire support.

# Dependable ...in emergencies

You have to depend on your equipment when rampaging nature puts communications systems to their severest tests.

You *can* depend on Hemingray Glass insulators to stand up under severe conditions and provide the service you need. Strong, uniform high quality Hemingray insulators since 1870 have been the world standard for quality . . . have carried most of the world's overhead telephone and telegraph wires.

Hemingray has pioneered many insulator developments, to keep pace with the requirements of improving communications systems. For prompt delivery of what you need . . . when you need it, you can always depend on Hemingray.

Hemingray Glass insulators are a product of Kimble Glass Company, subsidiary of Owens-Illinois, Toledo 1, Ohio.

HEMINGRAY INSULATORS
AN (I) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES · TOLEDO 1, OHIO

# *A Real Economy Program*

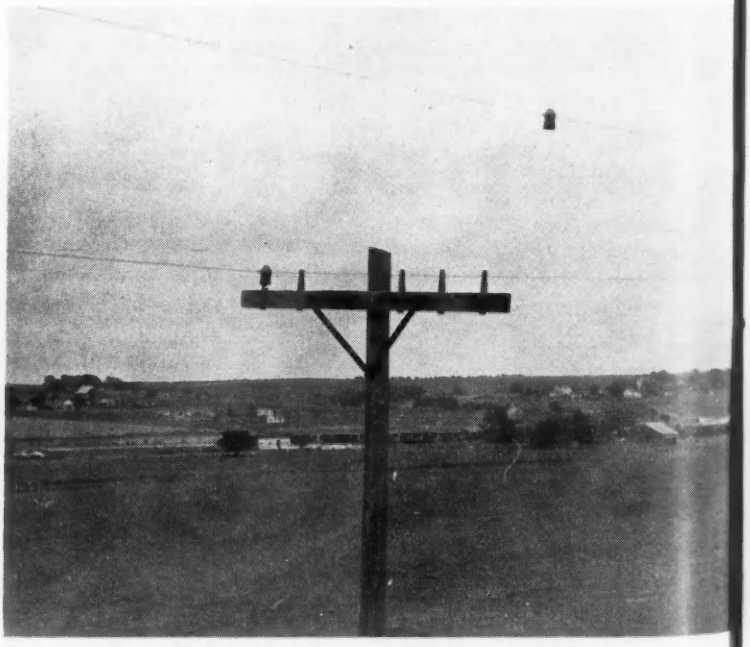
## Regular Outside Plant Maintenance

By RICHARD ALLEN

**IT IS A costly matter to let outside plant, station and central office equipment "run down." Once the deterioration has started it is difficult to get around to making the necessary repairs. This article tells how neglect can cause trouble and suggests maintenance routines that will save time and money.**

A RURAL plant record map is a big help in identifying locations of items on the inspection report.

HERE MAINTENANCE inspector is recording a pole that needs replacement.



EVEN IN THE BEST maintained plant, a "floating" insulator will occasionally be found.

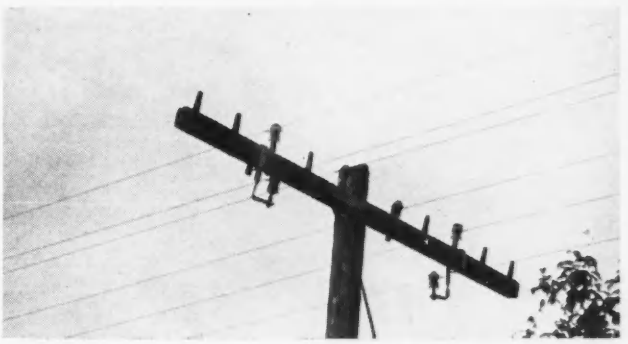
**A LOW WIRE SPAN is not to be tolerated. This trouble was taken care of by setting a pole of the required height where inspector is standing.**

**A HUNTER'S BULLET or a vandal's stone broke this insulator. Unless replaced, it may result in a noisy line in wet weather.**

THERE IS much talk about dial conversion programs these days. The phrase "dial conversion" brings to mind the brand new equipment going into a newly built central office with all the old manual equipment, switchboards, batteries, main frames, being sold for salvage or else relegated to the junk heap. As for station equipment, old crank type telephones have given way to spanking new dial handsets which are the pride of the subscribers. The outside plant is either new or has been rebuilt with new or reconditioned aerial cable replacing old open wire extensions, which gave so much trouble when they went through trees. Worn out drops have been replaced with new drop wire. New or good existing drop runs have been routed where necessary to avoid abrasion on trees and other obstructions.

It might seem with all this new equipment in place and everything going smoothly, there would be no troubles, not for a long time, the plant men hope.

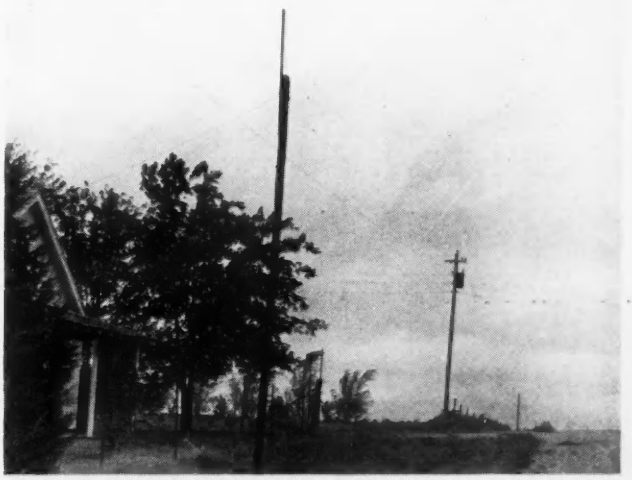
Yet, this is the very time to start thinking about keeping up the plant. The matter can wait two years, perhaps three, but that is risky. It is a costly matter to let outside plant as well as station and central office equipment run down. Once the deterioration has started, it is difficult to get around to making the necessary repairs promptly enough. It is all too easy to let those little things go another year to save labor, save material, in other words, just to get by, to ride on the good performance of the new equipment.



**A CARRIAGE BOLT nut came off and the crossarm brace fell away. A combinationman would have fastened it back in place if he had come in the scene.**

### *"Neglect Can Cause Trouble"*

HERE'S HOW neglect can cause trouble. For example, take the matter of tree foliage. Trees that have been removed are sprouting into bushy growths and branches that have been cut back to obtain clearances are growing back into contact with the line wires, unless a program of thorough brush eradication was followed originally in the rebuilding of the plant. Tree



**THIS DROP SPAN was discovered to be too low and had to be raised with an extension fixture on the drop pole. Clearance from the overhead power line was however found to be inadequate and the drop pole is scheduled for replacement with a joint pole to which the drop will be attached at the proper location for both road and power wire clearance.**

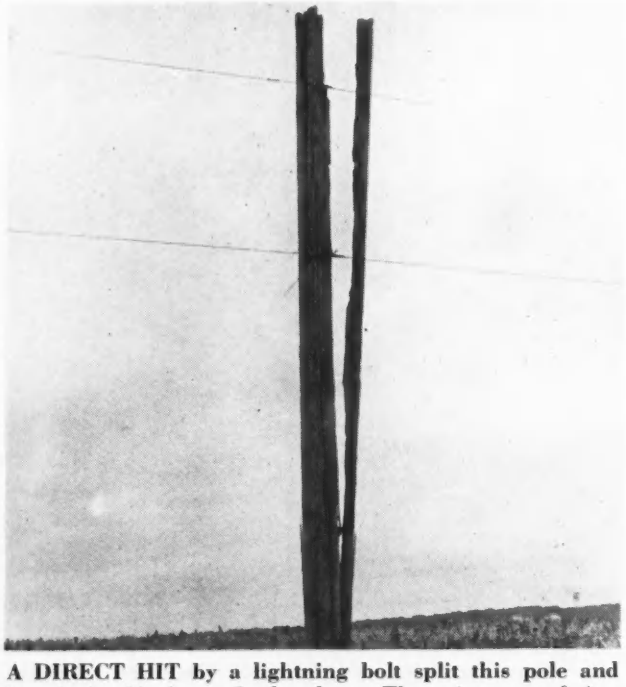
foliage in open wire affects the operation of dial office equipment by lowering the line insulation, that is, increasing the line leakage. Worse than that, they can "noise up" the lines when a power line is in immediate vicinity of the telephone lines by unbalancing the telephone circuits.

In the case of telephone drops, tree growth can eventually cause trouble even though the drops have practically abrasion-proof jackets. A tree limb could grow out above a drop, and under storm stress, break off and fall on a drop span. This could also happen on open wire lines, particularly in cases where trees have been killed by the chemical eradication method and left standing so that dead branches eventually break off and fall on the line wires.

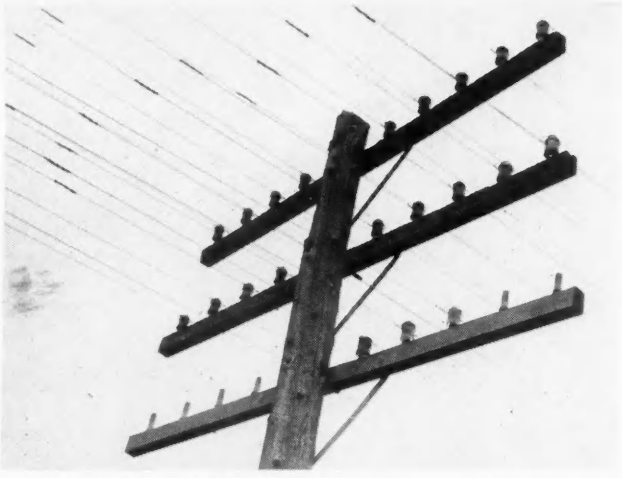
Another cause of trouble would be the accumulation of debris on telephone wires. It is surprising how much debris, weeds, branches, even pieces of hay wire, can accumulate on telephone open wires. Those things can cause shorts or grounds on the lines, especially in wet weather. Another problem arises from the tendency of line wires to stretch to some extent under heavy ice loads, blows from branches of trees, and other causes. Also, anchors may settle at line corners causing the guy to give slightly. A very slight give in the guy will cause quite an appreciable sag in the line wire at the point, and line wires with excessive slack can result in hits or momentary shorts of the line wires which is hard on the dial equipment in the office as the result of continual operation of the switches.

### *The Maintenance Program*

ALL THESE annoying problems can be avoided by a maintenance program in which plant workers are trained to keep the telephone plant under observation at all times in the course of their daily work and correct any conditions that might cause trouble later. The program also provides for annual inspections of the plant,



**A DIRECT HIT by a lightning bolt split this pole and knocked off the pole brackets. The wires are being temporarily supported until a pole can be set to replace the damaged one.**



**SPLICES IN LINE WIRES are troublesome unless properly made. Hand made splices are definitely ruled out. Twisted sleeves may be satisfactory, but modern compression type sleeves are the best in the long run.**

and a patrol of telephone lines once each year to check the following points:

(1) *Foliage Removal*: Prompt and regular foliage removal assures longer drop, cable, and open wire life and at the same time helps to prevent troubles caused by abrasion, leakage to ground, and electrical or lightning damage, particularly so in the case of drop wire and open wire lines. Trimming of trees should provide a year's or more clearance.

Chemical treatment is especially helpful in a foliage control program. Where an extensive eradication of trees and brush has been accomplished with a second or even a third treatment of right of ways, it will be unnecessary to have additional programs of this kind. Instead, plant workers who drive trucks may be provided with a hand sprayer which is kept full of herbicide for basal spraying of small trees, saplings, and sprigs which could grow into large trees or high brush and interfere with wire lines and drops. If a worker spots one of those sprigs coming up, he can give it a shot with his sprayer, thus killing it or else retarding its growth.

There is one important precaution to observe in the chemical treatment. This is not to spray low growing plants, such as sumac or wild plum, which attain a height seldom over 10 feet and which certainly would not interfere with wire lines having standard ground clearances. These growths should be left in since they provide ground covering for wild game and birds. All wild life experts and many farmers object strenuously to excessive removal of brush which cannot possibly harm telephone lines but provide cover and a source of food for birds and small animals.

(2) *Open Wire Plant*: In addition to clearing line wires of foliage, the following conditions should be inspected for and corrected: (a) broken insulators; (b) defective splices (use compression type sleeves); (c) loose ties; (d) bad pins, brackets, or crossarms; (e) missing or loose nuts on crossarm bolts; (f) missing or unfastened crossarm braces; (g) loose connections in bridle wires (Preferably use compression sleeves for trouble free connections); (h) inadequate ground clearance over roads, driveways, etc.; (i) insufficient clearances from power or other foreign wires; (j) slack or

broken guys or anchors; (k) uneven or excessive slack in line wires (In long span lines, vibration dampers will reduce excessive wire vibration causing chafing of wires at insulators); (l) badly rusted wires; and (m) missing or improper types of buffer protector blocks and poor or missing protection grounds.

(3) *Aerial Cable Plant*: This should be handled on a programmed basis, either on the portion giving most trouble or on all cable in certain exchanges. A walking and climbing patrol should be performed to check for:

(a) Holes in cable sheath (to be repaired by soldering over or by placing sleeves.)

(b) Unsupported splices or cable, damaged, corroded or slipped cable rings (Preferably spin the cable where possible.)

(c) Loose cable spinning wire, loose lashing wire clamps, and missing cable spacers (Loose spinning wire can be retightened by rapping on the messenger and at the same time pulling up the wire.)

(d) Broken face plates in terminals, bad terminal posts, and missing or damaged cover.

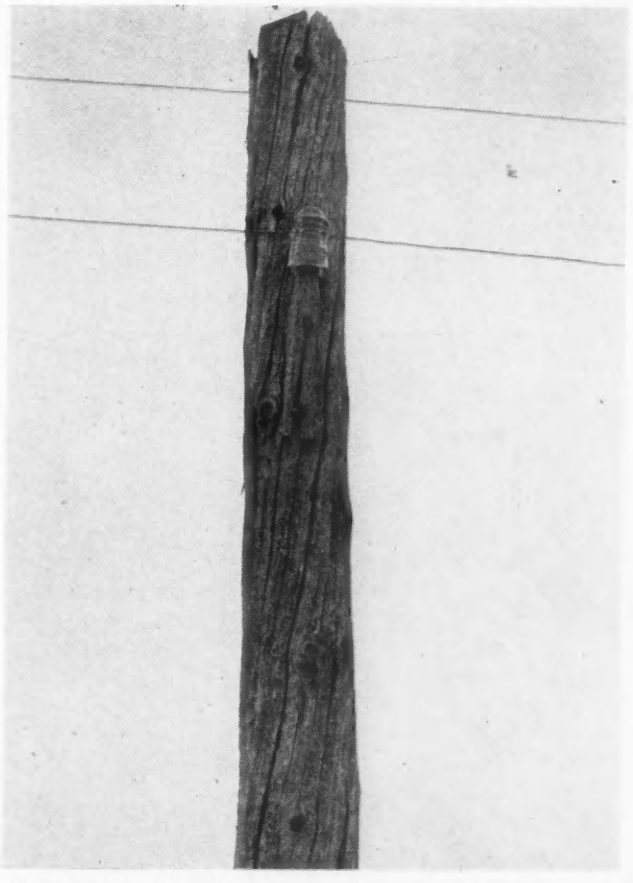
(e) Protectors at open wire junctions for missing operated, or improper type blocks. Correct these conditions. (Buffer protection inspection handled under open wire.)

(f) Dead drops from cable pairs to be disconnected and taped back neatly.

(g) Inadequate clearances from power wires or conditions tending to create power arcs.

(h) Grounded and shorted cable pairs to be cleared and these pairs restored to service.

(i) Messenger grounds and bonds in place. (Missing bonds to grounding conductor of multi-grounded neutral power lines are to be placed.)



**ANOTHER MAINTENANCE ITEM went on the inspector's report, this one a split wood pole bracket to be replaced.**

**EVEN WHERE BRANCHES are removed for long time clearance, permanent freedom from tree contacts can be obtained only when trees are cut down and the stumps chemically treated to retard sprouting.**

(4) *Subscribers Stations*: A programmed number of stations should be checked, based on period of time elapsed since last visit, or on some other practical plan. On routine station visits the following items should be checked: (a) dry cells needing replacement; (b) bad cords; (c) bad inside and ground wires; (d) defective station protector components (fuses and protector blocks); (e) poor transmission of talking set; (f) poor ringer operation or unsatisfactory ringer volume; (g) incorrect dial speed; (h) improper entrance for drop wire or bridle wire run from protector; and (i) unsatisfactory condition of drop wire and attachments to building.

(5) *Central Office Equipment, Manual*: For manual switchboard and other central office equipment, the following items should be checked for unsatisfactory operation and any abnormal conditions corrected: (a) cords and plugs; (b) keys; (c) jacks, lamps or signals; (d) relays; (e) wiring; (f) storage batteries; (g) common equipment; and (h) fire extinguishers.

A clean switchboard is generally in better service condition and is much easier to maintain. A vacuum cleaner should be employed to remove dirt. Specially treated dust cloths are good for outside surfaces. Distributing frames should be inspected for loose or unsoldered connections of jumpers to terminal lugs and for missing or improper protector blocks.

(6) *Central Office Equipment, Dial*: In dial offices, relays and switches must be kept clean and properly adjusted, using the proper tools and following the correct testing procedures for the type and make of the office apparatus. It is not practical to list specific pro-

# PEOPLES TELEPHONE anticipates

Zeno F. Henninger, President

During the past 10 years, the City of Butler and the counties surrounding it in Western Pennsylvania have enjoyed phenomenal telephone growth. In 1946, The Peoples Telephone Corporation provided service to 14,788 telephones in this area. Today, this company serves over 29,000 telephones through its 20 dial exchanges.

The Peoples Telephone Corporation has endeavored

ON THE FARM

Headquarters Building of The Peoples Telephone Corporation, Butler, Pa. This progressive company has 20 central communications offices. It maintains communications for over 29,000 telephones in Western Pennsylvania.

IN THE FACTORY

IN THE OFFICE

# CORPORATION

## continued growth in its area

to provide for this unusual growth by proper additions to cable and *pole-line* facilities, along with needed improvement to central-office equipment. Today, the company maintains a high grade of toll service through its use of microwave and carrier circuits.

The Peoples Telephone Corporation serves approximately 22,000 business and residential subscribers, compared to 13,000 customers 10 years ago. As Mr. Zeno F. Henninger, President, puts it: "We are serving the public by trying to provide the type of service they want."

"As our company expands, we install only pressure-creosoted poles,"

*says* **John R. Henninger,** *Secretary*

Pressure-creosoted poles are playing an important part in the rapid expansion of The Peoples Telephone Corporation. Last year, for example, 1,691 new line poles were added. And all of them are pressure-creosoted.

Mr. John R. Henninger, Secretary, estimates that these new poles will have a life span of 30 to 35 years. Based on past performance records with all utilities, his estimate should turn out to be accurate.

If you would like more information on pressure-creosoted utility poles, and the way they can enable you to save money and establish better service for your utility, just get in touch with the nearest Chemical Sales Office of United States Steel, or write to United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.

UNITED STATES STEEL USS CREOSOTE

***CREOSOTE'S PAST ASSURES WOOD'S FUTURE***

# USS CREOSOTE

*Sales Offices in* PITTSBURGH, NEW YORK, CHICAGO, CLEVELAND, SALT LAKE CITY, AND FAIRFIELD, ALABAMA

UNITED STATES STEEL

cedures, but the following general points are considered important:

(a) At the time the office equipment is installed, have all preliminary tests made in a thorough manner to detect any incipient faults that might develop into serious trouble later on.

(b) Follow a maintenance routine based on the manufacturer's intsructions. These instructions may be modified to some extent later, if experience indicates this to be desirable. It is important to follow the instructions thoroughly and keep records of the performance of the equipment and troubles that occur. Lubrication schedules should be carefully followed with modifications only as results are observed over a period of time.

**THERE IS NO SUBSTITUTE for correct testing methods and proper testing equipment. Here a connector test set is being used to test operation of the connector switches in a central dial office.**

(c) Be sure the central office battery is kept fully charged. Perform all tests required and keep a record of specific gravity readings so that the condition of the battery may be observed frequently and any necessary steps taken to correct abnormal conditions. Maintain the electrolyte level at the proper point to avoid loss of battery capacity.

(d) Dust and dirt must be kept out of the building to avoid relay and switch troubles from this source. Filters are not fully effective in retarding dust infiltration, so ventilators should be closed during dusty or wet weather. Excessive humidity can cause serious trouble. Dehumidifiers are helpful and electrical strip heaters may be employed in cold weather to warm the equipment slightly above the temperature of the surrounding air. This will prevent moisture deposits. (Note: A room temperature of less than 15° F will cause serious, though temporary reduction of the storage battery capacity. In cold climate areas, heating of the unattended office building to maintain a minimum temperature above this danger point is considered desirable.)

(e) Keep the building and equipment clean at all times. Avoid bringing in dirt and dust. Preferably use treated lintless cloths and mops to pick up dust without causing it to rise in the air to deposit on switches and relays. Cabinet doors should be closed at all times unless the equipment is actually being worked on.

### *Conclusion*

PREVENTIVE maintenance forestalls trouble. This is a fact that all telephone plant men are well aware of. The real problem is to thoroughly instill this important fact in all employes concerned so they will take the necessary steps to accomplish the desired results. The answer is to train the men responsible for maintaining telephone plant to handle any necessary maintenance immediately, like replacing a broken or floating insulator, or renailing a loose bracket at the time the trouble is first noted.

Of course there is the question of excessive maintenance which can be costly versus the minimum economical care of equipment in a dial central office. Only experience will enable plant managers to strike an ideal balance between these extremes.

Well trained personnel are important factors in successful maintenance programs, particularly where complicated equipment is involved. It is, therefore, desirable that any employe assigned to the care of central office equipment be given all necessary training. Unqualified plant personnel should not be permitted to attempt to clear troubles in relays and switches of central offices.

In addition to training in maintenance routines, the program should include proper care and use of tools, testing apparatus, and motor vehicles. Neglect of this equipment can be almost as costly as neglect of telephone plant. —*Richard Allen.*

## Worth Writing For

BATTERY BUYING GUIDE: "So You're Going to Buy an Industrial Battery" is the title of a new 16-page illustrated reference booklet (GB-1788) released by Gould-National Batteries, Inc.

Designed to help industrial battery buyers select the most economical and efficient battery for their operation, this pocket size booklet outlines the significance of battery design, and the contributions of research and development to lower costs, greater productivity and greater profits. A four-point program for battery users describes the importance of selecting the proper battery for the job, the purpose of correct charging and handling, reasons for systematic maintenance and the value of a continuing knowledge of battery condition. Three brief case history's demonstrate the value of correct application engineering in handling battery problems.

A condensed description of Gould's "Battery Maintenance Schools" is given, as well as information on Gould's Plus-Performance Plan for achieving maximum life and performance from an industrial battery. *For your copy write Readers' Service Dept., TE&M, 7720 N. Sheridan Rd., Chicago 26, Ill.*

TELETYPWRITERS: Booklet titled "The ABC's of Teletype Equipment" from Teleteype Corp., gives information on uses of the teletypewriter as (1) a communication instrument, (2) a basic element in production central systems, and (3) as a "conveyor system" for channelling complex row data to a computing center thousands of miles away.—*For your copy write Readers' Service Dept., TE&M, 7720 N. Sheridan Rd., Chicago 26, Ill.*

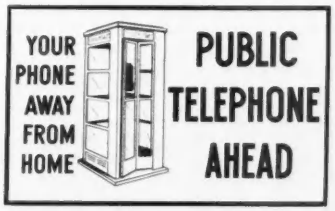
MAKE GLADWIN PLASTICS, INC., YOUR SOURCE FOR QUALITY PLASTIC PRODUCTS

PROVEN PRODUCING REVENUE

## MERCHANDISING AIDS

FOR THE TELEPHONE INDUSTRY

OF PLASTIC AND REFLECTORIZED METAL




REFLECTORIZED HIGHWAY SIGNS
Over 20 Sizes and Designs

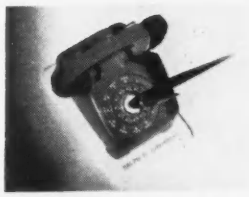
OVER 200 SIZES AND DESIGNS
For every type indoor location

LIGHTED SIGNS

More than 20 Sizes and Designs to select from. Let us use your emblem on your signs.

CARRYING CASES FOR ALL MAKES MINIATURE AND FULL SIZE TELEPHONES

More than 10 Designs for selling to homes and businesses



We have the famous TEL-PEN
Set to promote Inter-Company or Customer Goodwill

OUR DISTRICT REPRESENTATIVE IN YOUR AREA WILL BE GLAD TO HELP SOLVE YOUR PROBLEM

*ALL LEADING DISTRIBUTORS CATALOG OUR PRODUCTS*

## GLADWIN PLASTICS, INC.

165 COURTLAND ST., N. E. ATLANTA, GA. PHONE JAckson 5-5384



# basic electronics

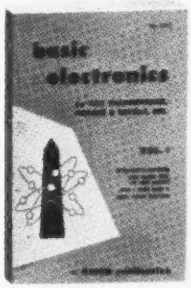
by Van Valkenburgh, Nooger & Neville, Inc.

Like its companion volume "Basic Electricity," this book on "Basic Electronics" has been recommended by T. DeWitt Talmage in his articles on "Planning Plant Practices," appearing in Telephone Engineer & Management.

Over 25,000 Navy trainees have already learned Basic Electronics this easy "Picture Book" Way! Everyone can master the basics of Electronics with this same "Learn-by-Pictures" training course! Over 800 simple, easy-to-understand drawings explain every section . . . these "teaching" pictures actually make up more than half the ENTIRE course! No other Basic Electronics course in America uses this revolutionary illustrative technique Teaching and learning made faster and easier than you'd ever dream possible!

There's a complete idea on every page . . . and at least one big illustration on that same page to explain it. Then, at the end of every section, there are review pages that highlight the important topics just covered. This course builds a thorough, step-by-step knowledge at your own pace . . . as fast as you yourself want to go!

Sponsored by the Navy to turn out trained technicians in record time, this modern course presents Basic Electronics in a simple way that everyone can grasp . . . regardless of previous education!




*Volume 1 of "Basic Electronics" covers Diodes and Power Supplies. Volumes 2 and 3 cover Amplifiers and Oscillators. Volumes 4 and 5 cover Transmitters and Receivers.*

Individual Volumes $2.25

Cat. No. 170 Soft Cover 5 Volumes, 550 Pages $10.00
Cat. No. 170H Cloth Bound (5 Volumes in 1) $11.50

**Among the very prominent industrial users of this course are: Otis Elevator, Western Electric, IBM, Remington Rand, DuPont, Kansas City Power and Light, Penn R. R., N. Y. Central R. R., N. J. Bell Telephone, G. E., N Y. Telephone, and more!**

". . . extremely well prepared and superbly illustrated. . ." *Popular Electronics*

". . . unique simplification of an ordinarily complex subject . . . exceptional clarity of illustrations and text. . ." *Electronics & Communications*

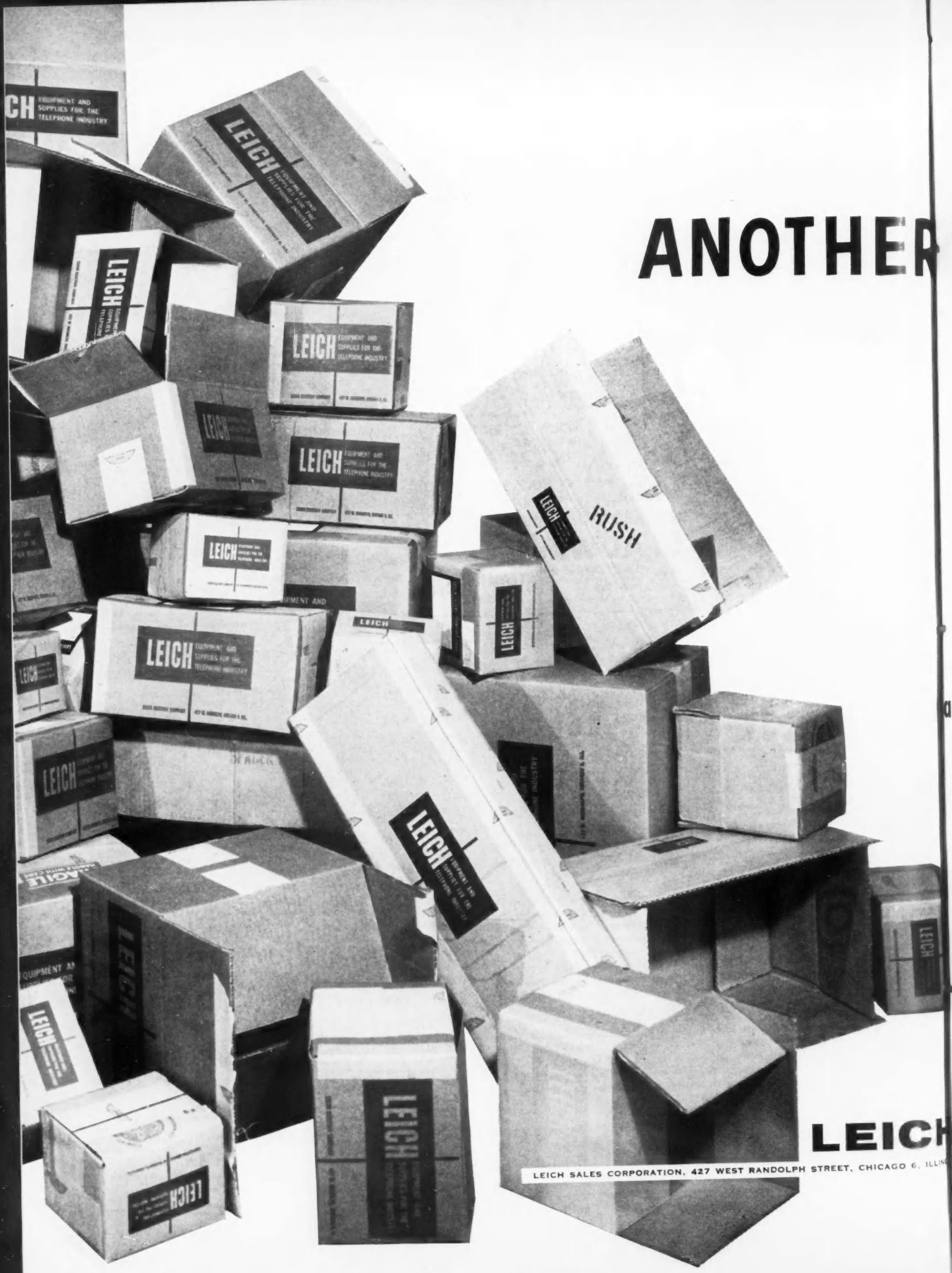
". . . a better and quicker way to teach and learn. . ." *Ft. Gordon Rambler*

*Order from*

EDUCATIONAL DIVISION

**Telephone Engineer Publishing Corp.**

**7720 N. Sheridan Rd., Chicago 26, Ill.**


ANOTHER
LEICH
RUSH
LEICH SALES CORPORATION, 427 WEST RANDOLPH STREET, CHICAGO 6, ILLI

# HAPPY CUSTOMER!

**the quality was right-**

**the price was right-**

**the delivery was right-**

**and <u>every</u> single item was**

**ordered from <u>one</u> source!**

**--LEICH for supplies**

You can depend on Leich supplies — they are all made by famous manufacturers. Each and every one has been proved on the job. For your further protection, *everything* is fully guaranteed.

Our customers know that Leich's prices are competitive with all . . . and less than many. Then too, you save money by using the best tools and materials.

Your orders are handled promptly and efficiently by experienced people . . . filled exactly as you have requested. And . . . delivery is made *where* and *when* you want it.

Everything you need—tools, hardware, wire, cable, protection equipment, aluminum telephone booths, Electronic Secretaries can be obtained from your Leich warehouse. By stocking a complete selection, Leich is always able to fill your immediate needs.

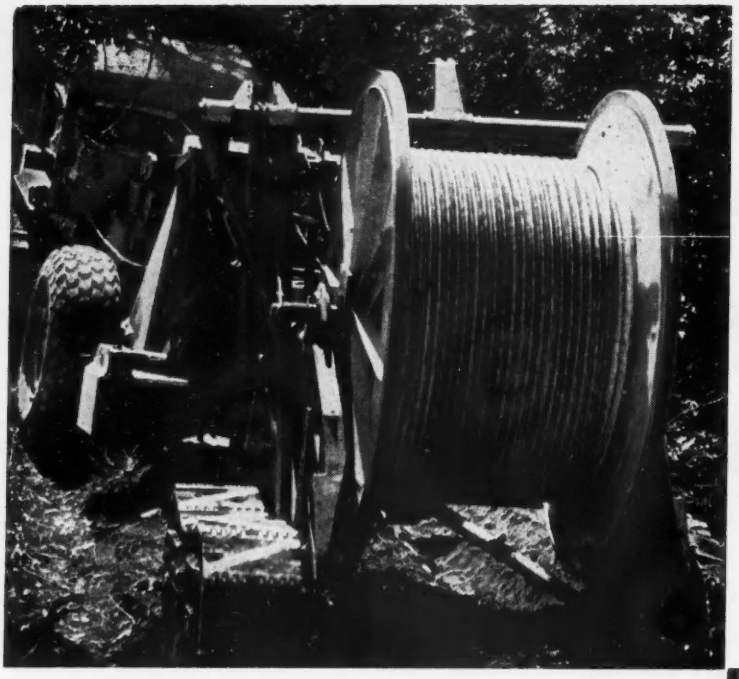
*Send your next order for supplies to Leich—and you too will become a happy customer! Let us know if you haven't received our catalog.*

**manufacturers of telephones, switchboards and related apparatus since 1907**

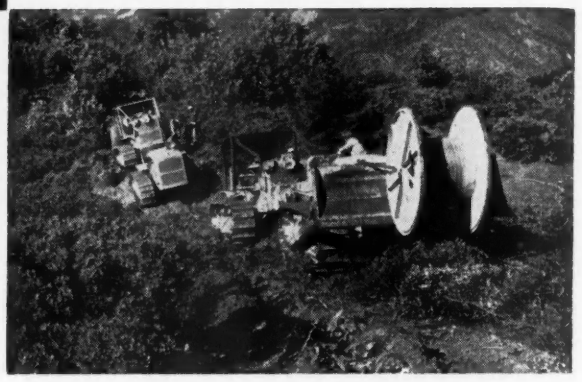
PACIFIC COAST: 11401 WEST PICO BLVD., LOS ANGELES 64, CALIFORNIA

SOUTHWEST: 1227 SLOCUM STREET, DALLAS 7, TEXAS

GENERAL TELEPHONE SYSTEM



# Modern Cable Construction



**In this article Mr. Reed concludes Chapter IX of his discussion of "Modern Cable Construction," by presenting information on — (1) Characteristics of "Copperweld" self-supporting communication cables; (2) self-supporting telephone cables with medium hard drawn copper conductors; and (3) attaching cable to poles.**

By JOHN S. REED

FROM THE CABLE manufacturer's viewpoint, Copperweld self-supporting communication cable can be adapted to manufacture by existing facilities for the production of standard plastic jacketed copper-conductor cables. The principal differences lie in twinning the higher strength Copperweld pairs which are stiffer than soft copper wire, and in cabling the insulated and twinned pairs. The assembly must be relatively firm and adequately protected to perform properly with the special support hardware. In spite of the need to adjust existing facilities for this stiffer wire, many thousands of feet of this self-supporting cable have been successfully made.

Copperweld conductors of 40% conductivity are employed to compromise strength and handling properties so that the cable conductor would be strong and at the same time not be stiff or springy. It is also considered important to have conductors with a low elongation so that the cables would not stretch permanently under storm loading and require sag maintenance in the field. Toughness or resistance to breakage on bending about a binding post is another important factor.

For most of the existing installations, a No. 19 AWG 40% conductivity Copperweld wire specially drawn to provide a tensile strength of approximately 125,000 psi is employed to provide an easy-handling wire, much less springy than the usual drop wire, but at the same time having substantial resistance to breakage and adequate strength for urban or rural construction without the use of a messenger. It is said to

**Table XIX — Characteristics of and Design Limits for Self-Supporting Telephone Cables with 19 Gauge Copperweld Conductors**

| No. of Pairs | Approx. Outside Diameter - Inches | Weight - Lbs. Per 1000 Ft. Approx. | Rated Breaking Strength - Lbs. | Normal Stringing Tension For: Rated Breaking Strength In Lbs. | Normal Stringing Tension For: Percent of Rated Breaking Strength | Maximum Span Length In Feet | Maximum Tension Under Heavy Loading For: Rated Breaking Strength In Lbs. | Maximum Tension Under Heavy Loading For: Percent of Rated Breaking Strength |
|---|---|---|---|---|---|---|---|---|
| 6 | .450 | 121 | 1512 | 225 | 15% | 250 | 1050 | 70% |
| 11 | .560 | 203 | 2772 | 555 | 20% | 325 | 1810 | 65% |
| 16 | .675 | 252 | 4032 | 1010 | 25% | 400 | 2540 | 63% |
| 26 | .800 | 388 | 6552 | 1640 | 25% | 400 | 3540 | 54% |

*DC Resistance per conductor Mile — 106 ohms*
*Attenuation per Mile at 1000 cycles — 2.0 DB*
*Mutual Capacitance (Approx.) — .085 Microfarads*

**Table XX — Sag and Tension Data for Copperweld Self-Supporting Telephone Cable Under Design Limits Specified in Table XIX.***
***Light, Medium, and Heavy Loading Districts***

| Cable Size in Pairs | Span Length Feet | Temp. 0°F Sag In. | Temp. 0°F Ten. Lbs. | Temp. 30°F Sag In. | Temp. 30°F Ten. Lbs. | Temp. 60°F Sag In. | Temp. 60°F Ten. Lbs. | Temp. 90°F Sag In. | Temp. 90°F Ten. Lbs. | Temp. 120°F Sag In. | Temp. 120°F Ten. Lbs. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 Pair | 100 | 5½ | 325 | 6½ | 275 | 8 | 225 | 10 | 185 | 12 | 145 |
| | 125 | 9 | 315 | 10½ | 270 | 12½ | 225 | 15 | 190 | 18 | 160 |
| | 150 | 13 | 310 | 15 | 265 | 18 | 225 | 21 | 195 | 24½ | 165 |
| | 175 | 18½ | 300 | 21 | 260 | 24½ | 225 | 28 | 200 | 32 | 175 |
| | 200 | 25 | 290 | 28 | 260 | 32 | 225 | 36 | 200 | 40 | 180 |
| | 225 | 32 | 285 | 36 | 255 | 41 | 225 | 45 | 205 | 50 | 185 |
| | 250 | 41 | 280 | 45 | 250 | 50 | 225 | 55 | 205 | 60 | 190 |
| 11 Pair | 100 | 4 | 770 | 5 | 660 | 6½ | 555 | 7½ | 460 | 8½ | 370 |
| | 125 | 6 | 760 | 7 | 655 | 8½ | 555 | 10 | 465 | 12½ | 380 |
| | 150 | 9 | 750 | 10½ | 650 | 12½ | 555 | 14½ | 470 | 17½ | 400 |
| | 175 | 12½ | 730 | 14½ | 640 | 17 | 555 | 20 | 480 | 23 | 410 |
| | 200 | 16½ | 720 | 19 | 635 | 22 | 555 | 25 | 485 | 29 | 420 |
| | 225 | 21 | 710 | 24 | 630 | 28 | 555 | 32 | 490 | 36 | 430 |
| | 250 | 26½ | 700 | 30 | 625 | 34 | 555 | 38½ | 495 | 43 | 440 |
| | 275 | 32½ | 695 | 37 | 620 | 42 | 555 | 46½ | 500 | 51 | 450 |
| | 300 | 40 | 685 | 44½ | 615 | 49 | 555 | 55 | 500 | 60 | 460 |
| | 325 | 49 | 675 | 55 | 610 | 60 | 555 | 66 | 505 | 72 | 470 |
| 16 Pair | 150 | 6½ | 1300 | 7 | 1160 | 8½ | 1010 | 10 | 860 | 12 | 730 |
| | 175 | 9 | 1300 | 10 | 1160 | 11½ | 1010 | 13 | 870 | 16 | 740 |
| | 200 | 12 | 1290 | 13 | 1150 | 15 | 1010 | 17 | 870 | 20 | 750 |
| | 225 | 15 | 1290 | 17 | 1150 | 19 | 1010 | 22 | 880 | 25 | 760 |
| | 250 | 18½ | 1280 | 21 | 1150 | 23 | 1010 | 27 | 880 | 31 | 770 |
| | 275 | 22½ | 1270 | 25 | 1140 | 28 | 1010 | 32 | 890 | 37 | 780 |
| | 300 | 27 | 1270 | 30 | 1140 | 34 | 1010 | 38 | 890 | 43 | 790 |
| | 325 | 32 | 1260 | 35 | 1130 | 40 | 1010 | 45 | 900 | 50 | 800 |
| | 350 | 37 | 1250 | 41 | 1130 | 46 | 1010 | 51 | 900 | 58 | 810 |
| | 375 | 43 | 1240 | 48 | 1120 | 53 | 1010 | 59 | 910 | 65 | 820 |
| | 400 | 49 | 1230 | 54 | 1120 | 60 | 1010 | 67 | 910 | 73 | 820 |
| 26 Pair | 150 | 6 | 2130 | 7 | 1900 | 8 | 1640 | 9½ | 1400 | 11 | 1180 |
| | 175 | 8½ | 2120 | 10 | 1880 | 11 | 1640 | 13 | 1410 | 15 | 1190 |
| | 200 | 11 | 2110 | 12½ | 1870 | 14 | 1640 | 17 | 1420 | 19 | 1200 |
| | 225 | 14 | 2100 | 16 | 1870 | 18 | 1640 | 21 | 1430 | 24 | 1230 |
| | 250 | 17 | 2080 | 20 | 1860 | 22 | 1640 | 26 | 1430 | 29 | 1250 |
| | 275 | 21 | 2070 | 24 | 1850 | 27 | 1640 | 31 | 1440 | 35 | 1270 |
| | 300 | 25 | 2060 | 28 | 1850 | 32 | 1640 | 36 | 1450 | 41 | 1280 |
| | 325 | 30 | 2050 | 33½ | 1840 | 38 | 1640 | 42 | 1460 | 47½ | 1300 |
| | 350 | 35 | 2040 | 39 | 1830 | 44 | 1640 | 49 | 1470 | 54½ | 1320 |
| | 375 | 40 | 2030 | 45 | 1820 | 50 | 1640 | 56 | 1480 | 62 | 1330 |
| | 400 | 46 | 2020 | 51 | 1810 | 57 | 1640 | 63 | 1490 | 70 | 1350 |

**Based on data furnished through courtesy of Plastic Wire and Cable Corporation for their Types 130 and 160 No. 19 Copperweld self-supporting cables.*

have three or four times the strength of medium hard drawn or annealed copper wire cables, and it is especially well adapted to the smaller size cables, 6-, 11-, 16-, and 26-pair.

Electrically, these Copperweld cables operate very much the same as copper cables, making allowance for the conductivity of the Copperweld being 40 per cent of that of solid copper. This means that the DC resistance of No. 19, 40% conductivity Copperweld cable is slightly higher than that of No. 22 AWG copper cable; and in talking properties at voice frequency, tests indicate No. 19 Copperweld is about the same as No. 22 copper. As the frequency of transmission goes up, the properties of No. 19 AWG Copperweld cable begin to approach those of No. 19 copper because of the favorable skin effect of the Copperweld wire.

*Table* XIX indicates the electrical and mechanical characteristics of cable with No. 19 Copperweld conductors, and the design limits involved in stringing spans of this type of cable. *Table* XX shows typical stringing sags and tensions for the four sizes of cable made with Copperweld conductors. These sags and tensions are the same for all storm loading districts. Sags are minimum for the design limits indicated in *Table* XIX and should be increased as permitted by ground clearances available.

### *Self-Supporting Telephone Cables With Medium Hard Drawn Copper Conductors — Stringing Sags and Tensions*

AS PREVIOUSLY stated, self-supporting cables with hard drawn or medium hard-drawn copper conductors are also available for use where span lengths do not exceed specific limits and the proper type of attachments are employed to support them on poles.

The installation data given in this section for plastic jacketed cables with No. 19 gauge medium hard drawn copper conductors is based on copyrighted information furnished through the courtesy of the Ansonia Cable Corporation. This particular type of cable is the self-supporting Ankoseal Telephone Cable Type 775-P-SS, which is available in sizes 6-, 11-, 16-, and 26-pair.

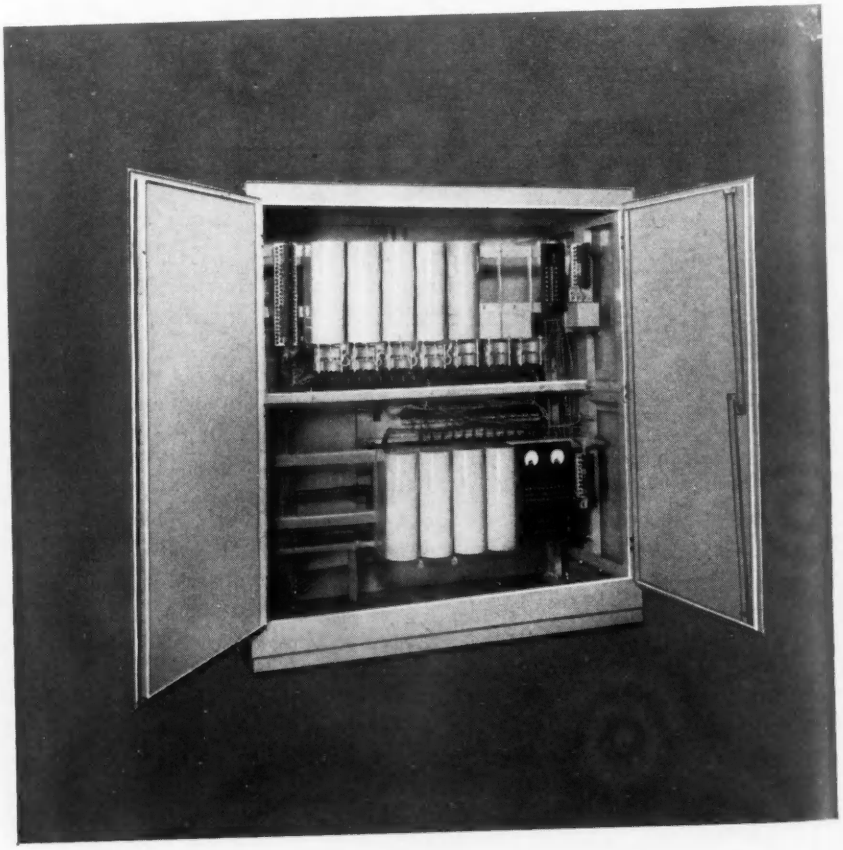
The maximum span length for each size of Type 775-P-SS cable in new construction is determined from the allowable sag which will provide the required minimum vertical clearance at 60° F with no ice or wind load on the cable. An example of the maximum spans that can be employed for the 6-, 11-, 16-, and 26-pair No. 19 AWG cables in heavy, medium,

**MISTER...**

did you know—
Automatic now
offers you a...

**NEW P-A-B-X...**

serving up to
50 lines
at a...



# LOW PRICE...

lower, even, than some competitive 40-line boards, and that you get...

# FAST DELIVERY!

because it's available from stock? You didn't? Well—read on!

## FACTS FOR THE FACTUAL-MINDED

• Automatic's new Type 25B P-A-B-X meets today's most popular service demand—25 to 50 telephones, 7 trunks, 10 links—and can expand beyond 50 stations if necessary. Convenient cordless attendant cabinet.

• Type 25B provides these standard modern services

—Group Hunting (calls automatically routed to an idle telephone in a group)

—"Meet me" Conference Service

• All these optional services, too!

| | |
|---|---|
| Attendant Priority Service | PA Cut-in |
| Executive Key-calling | Code Call |
| Executive Direct-line | Night Transfer |
| Executive Right-of-way | Call Forwarding |
| Direct Line Service | Tie Lines |
| Secretary Answering | "Progressive Selection" Conference Service |
| Area Paging | "Fixed Group" Conference Service |

Your P-A-B-X business future will be even rosier with Automatic's new Type 25B. It's just the size most of your customers need—and it's priced right.

We'll be happy to send you full details. Ask for new Circular 1815-A. Address: *Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7. Or call HAymarket 1-4300.*

AUTOMATIC ELECTRIC

ORIGINATORS OF THE DIAL TELEPHONE

and light loading districts using a 25 foot or 30 foot pole is shown in *Table* XXI for one et of conditions.

From this data, it will be noted that, for a small investment in a higher pole, a considerable increase in span lengths can be obtained. The span lengths may also be increased in cases where the minimum ground clearance can be reduced and greater sags employed. All these points should be analyzed to realize the greatest economy in this type of construction.

*Table* XXI for one set of conditions. tensions for the three storm loading districts contain no-load and full-load characteristics which show the normal and maximum values indicative of the sags and tensions obtained under normal and full-loading conditions for the various span lengths. The normal (60° F, no wind) sags are minimum sags for given span lengths which will determine the minimum vertical clearance on existing pole lines.

If these values indicate that these clearances cannot be obtained, a comparison should be made of the cost of setting an additional pole for the self supporting cable and the cost of placing the cable on a messenger strand in the existing spans.

**Table XXI — Span Lengths with 6-, 11-, 16-, and 26-Pair No. 19 AWG Ankoseal Self-Supporting Cable Type 775-P-SS with 25 Foot and 30 Foot Poles Under One Set of Conditions.**

| Length of Pole Feet | Depth of Setting In Average Firm Ground-Feet | Allowable Sag of Cable at 60° F, No Load-Feet * |
|---|---|---|
| 25 | 5 | 4.33 |
| 30 | 5½ | 8.83 |

*Based on location of cable support 20" from top of pole and a ground clearance of 14 feet.

| Cable Size | Loading District | Maximum Span in Feet for: 25 Foot Pole | 30 Foot Pole |
|---|---|---|---|
| 6 Pr. No. 19 AWG | Heavy | 125 | — |
| | Medium | 175 | — |
| | Light | 210 | — |
| 11 Pr. No. 19 AWG | Heavy | 175 | 230 |
| | Medium | 240 | 310 |
| | Light | 245 | 350 |
| 16 Pr. No. 19 AWG | Heavy | 205 | 265 |
| | Medium | 250 | 355 |
| | Light | 250 | 350 |
| 26 Pr. No. 19 AWG | Heavy | 255 | 330 |
| | Medium | 265 | 380 |
| | Light | 265 | 380 |

Copyright 1953 by The Ansonia Wire & Cable Co. All Rights Reserved.


# basic electricity

**by Van Valkenburgh, Nooger & Neville, Inc.**

In the October, 1956 issue of "Telephone Engineer & Management," author T. DeWitt Talmage referred to this book as an "effective training manual."

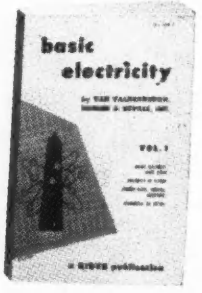
"Regardless of the plant trainee's previous education," said Mr. Talmage, "one of the most understandable, best illustrated training manuals ever published on the subject of basic electricity became available to the public with publication of "Basic Electricity."

Over 25,000 Navy trainees have already learned Basic Electricity this easy "Picture Book" way! Everyone can master the basics of Electricity with this same "Learn-by-Pictures" training course!

Over 900 simple, easy-to-understand drawings explain every section . . . these "teaching" pictures actually make up more than half the ENTIRE course! No other Basic Electricity course in America uses this revolutionary illustrative technique! Teaching and learning made faster and easier than you'd ever dream possible!

There's a complete idea on every page . . . and at least one big illustration on that same page to explain it. What's more, an imaginary instructor gives "demonstrations" that make it even easier for the trainee to understand. Then, at the end of every section, there are review pages that highlight the important topics just covered. This course builds a thorough, step-by-step knowledge at your own pace . . . as fast as you yourself want to go!

Sponsored by the Navy to turn out trained technicians in record time, this modern course presents Basic Electricity in a simple way that everyone can grasp . . . regardless of previous education!




*Volumes 1 and 2 of "Basic Electricity" cover DC components and circuits. Volumes 3 and 4 cover AC components and circuits. Volume 5 covers AC and DC motors and machinery.*

**Individual Volumes $2.25**

**Cat. No. 169 Soft Cover 5 volumes, 624 Pages $10.00**
**Cat. No. 169-H Cloth Bound (5 Volumes in 1) $11.50**

**Among the very prominent industrial users of this course are: Otis Elevator, Western Electric, IBM, Remington Rand, DuPont, Kansas City Power and Light, Penn R. R., N. Y. Central R. R., N. J. Bell Telephone, G. E., N Y. Telephone, and more!**

". . . A practical encyclopedia. . . *Parts Jobber*
". . . The material is so excellently arranged and so amply illustrated that even the rank beginner can rapidly grasp the full import of any topic under discussion . . " *Popular Electronics*

". . . truly excellent. . . " *Tape Recording*

**Telephone Engineer Publishing Corp.**

**7720 N. Sheridan Rd., Chicago 26, Ill.**

***Order from***

**EDUCATIONAL DIVISION**

## Table XXII — Sag and Tension Data — Heavy Loading District
## Ankoseal Self-Supporting Telephone Cable Type 775-P-SS (19 Gauge Medium Hard Copper)

| Cable Size (Pairs) | Span Length Feet | Prestressing Sags and Tensions | | Final Sags and Tensions After Installation | | | | | | | | Full Load Characteristics | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Temp. 0° F | | Temp. 30° F | | Temp. 60° F* | | Temp. 90° F | | Temp. 0° F** | |
| | | Sag Feet | Tension Lbs. | Sag Feet | Tension Lbs. | Sag Feet | Tension Lbs. | Sag Feet | Tension Lbs. | Sag Feet | Tension Lbs. | Sag Feet | Tension Lbs. |
| | 50 | 0.08 | 465 | 0.14 | 272 | 0.18 | 217 | 0.24 | 163 | 0.34 | 116 | 0.87 | 422 |
| | 75 | 0.18 | 500 | 0.52 | 170 | 0.68 | 130 | 0.88 | 100 | 1.08 | 81 | 1.83 | 455 |
| 6 Pr. | 100 | 0.31 | 500 | 1.87 | 84 | 2.10 | 75 | 2.33 | 68 | 2.53 | 62 | 3.26 | 455 |
| | 125 | 0.49 | 500 | 3.82 | 64 | 4.02 | 61 | 4.23 | 58 | 4.43 | 56 | 5.13 | 455 |
| | 150 | 0.71 | 500 | 6.11 | 58 | 6.31 | 58 | 6.48 | 55 | 6.68 | 54 | 7.43 | 455 |
| | 100 | 0.24 | 900 | 0.44 | 479 | 0.56 | 382 | 0.72 | 297 | 0.94 | 225 | 1.93 | 818 |
| | 125 | 0.36 | 915 | 0.95 | 349 | 1.19 | 281 | 1.50 | 222 | 1.83 | 182 | 2.98 | 832 |
| | 150 | 0.52 | 915 | 2.06 | 232 | 2.42 | 198 | 2.80 | 171 | 3.17 | 152 | 4.28 | 832 |
| | 175 | 0.71 | 915 | 3.65 | 179 | 4.02 | 162 | 4.38 | 149 | 4.71 | 139 | 5.87 | 832 |
| 11 Pr. | 200 | 0.93 | 915 | 5.53 | 155 | 5.87 | 146 | 6.22 | 138 | 6.55 | 131 | 7.68 | 832 |
| | 225 | 1.17 | 915 | 7.60 | 143 | 7.93 | 137 | 8.28 | 131 | 8.58 | 127 | 9.73 | 832 |
| | 250 | 1.46 | 915 | 10.0 | 134 | 10.3 | 130 | 10.7 | 127 | 11.0 | 123 | 12.1 | 832 |
| | 275 | 1.76 | 915 | 12.7 | 129 | 13.0 | 126 | 13.3 | 123 | 13.6 | 121 | 14.7 | 832 |
| | 300 | 2.09 | 915 | 15.5 | 126 | 15.8 | 124 | 16.2 | 121 | 16.5 | 119 | 17.6 | 832 |
| | 100 | 0.25 | 1160 | 0.43 | 692 | 0.53 | 553 | 0.68 | 432 | 0.91 | 322 | 1.68 | 1057 |
| | 125 | 0.36 | 1270 | 0.68 | 676 | 0.84 | 550 | 1.07 | 432 | 1.35 | 340 | 2.42 | 1150 |
| | 150 | 0.50 | 1330 | 1.11 | 598 | 1.35 | 490 | 1.66 | 399 | 1.97 | 336 | 3.31 | 1210 |
| | 175 | 0.68 | 1330 | 1.93 | 465 | 2.33 | 387 | 2.74 | 330 | 3.17 | 285 | 4.49 | 1210 |
| | 200 | 0.88 | 1330 | 3.28 | 361 | 3.67 | 321 | 4.14 | 285 | 4.56 | 259 | 5.90 | 1210 |
| 16 Pr. | 225 | 1.12 | 1330 | 4.78 | 313 | 5.22 | 287 | 5.66 | 264 | 6.10 | 246 | 7.48 | 1210 |
| | 250 | 1.38 | 1330 | 6.62 | 279 | 7.05 | 263 | 7.48 | 248 | 7.92 | 234 | 9.27 | 1210 |
| | 275 | 1.67 | 1330 | 8.56 | 262 | 8.98 | 250 | 9.38 | 239 | 9.82 | 229 | 11.2 | 1210 |
| | 300 | 1.99 | 1330 | 10.8 | 247 | 11.3 | 238 | 11.7 | 229 | 12.1 | 222 | 13.4 | 1210 |
| | 325 | 2.34 | 1330 | 13.3 | 237 | 13.7 | 231 | 14.1 | 224 | 14.5 | 218 | 15.9 | 1210 |
| | 350 | 2.71 | 1330 | 15.9 | 230 | 16.3 | 225 | 16.7 | 220 | 17.1 | 215 | 18.5 | 1210 |
| | 375 | 3.04 | 1330 | 18.7 | 226 | 19.1 | 221 | 19.5 | 217 | 20.3 | 213 | 21.2 | 1210 |
| | 100 | 0.25 | 1655 | 0.37 | 1150 | 0.46 | 917 | 0.61 | 702 | 0.83 | 507 | 1.31 | 1502 |
| | 125 | 0.37 | 1765 | 0.59 | 1115 | 0.73 | 900 | 0.94 | 702 | 1.24 | 536 | 1.92 | 1603 |
| | 150 | 0.51 | 1865 | 0.87 | 1092 | 1.08 | 884 | 1.36 | 702 | 1.71 | 558 | 2.61 | 1695 |
| | 175 | 0.66 | 1965 | 1.23 | 1061 | 1.49 | 873 | 1.85 | 702 | 2.27 | 574 | 3.38 | 1785 |
| | 200 | 0.82 | 2060 | 1.65 | 1028 | 2.00 | 848 | 2.42 | 702 | 2.89 | 587 | 4.22 | 1870 |
| | 225 | 1.00 | 2140 | 2.15 | 998 | 2.58 | 833 | 3.07 | 702 | 3.57 | 603 | 5.13 | 1945 |
| 26 Pr. | 250 | 1.23 | 2160 | 3.02 | 879 | 3.52 | 754 | 4.07 | 653 | 4.64 | 573 | 6.27 | 1966 |
| | 275 | 1.49 | 2160 | 4.22 | 762 | 4.79 | 672 | 5.38 | 598 | 5.96 | 541 | 7.62 | 1966 |
| | 300 | 1.77 | 2160 | 5.60 | 682 | 6.21 | 615 | 6.81 | 561 | 7.41 | 517 | 9.08 | 1966 |
| | 325 | 2.08 | 2160 | 7.12 | 632 | 7.74 | 582 | 8.34 | 540 | 8.95 | 505 | 10.6 | 1966 |
| | 350 | 2.41 | 2160 | 8.87 | 589 | 9.46 | 554 | 10.1 | 518 | 10.7 | 492 | 12.4 | 1966 |
| | 375 | 2.76 | 2160 | 10.7 | 563 | 11.3 | 532 | 12.0 | 503 | 12.5 | 482 | 14.2 | 1966 |

*Also no load characteristics.

**For one-half inch ice and four pound wind.

Based on data Copyrighted 1953 by Ansonia Wire & Cable Co. All rights reserved.

Out in the rolling Ohio countryside, 25 miles southeast of Cleveland, lies the charming village of Hudson, headquarters of Western Reserve Telephone Co.

One of the country's most progressive independents, Western Reserve is managed by the four Case brothers: Nelson, Ted, Baxter and Weldon.

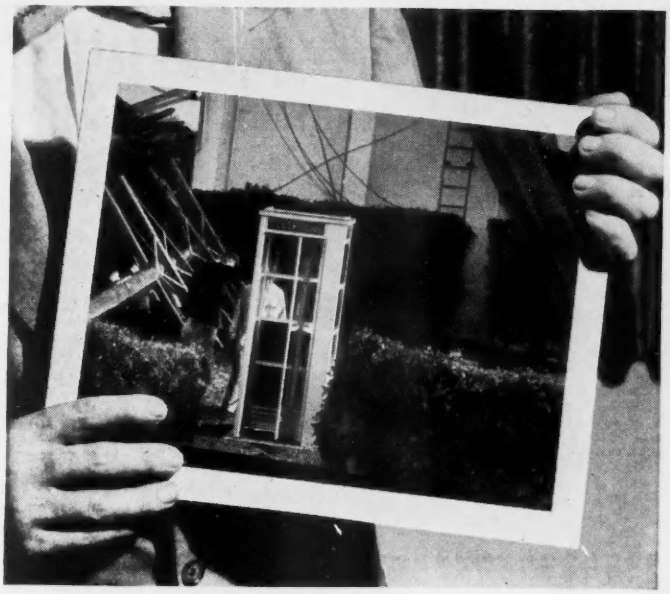
# "OUR NEW ALCOA BOOTHS EARN $90 PER MONTH,"

## Reports Nelson Case of Western Reserve Telephone Company

Western Reserve Telephone Company recently installed eight Alcoa® Outdoor Aluminum Booths and some are earning $90 a month and more—all additional income, since there has been no noticeable decrease in income from pay stations in nearby stores.

Why are Alcoa Booths such good revenue earners? Nelson Case reports, "These booths are attractive, they're eye-catching. People like to use them. They're nice and clean. They're big and roomy—33½" square. And they're brightly lighted at night so they earn money for us 24 hours a day."

Western Reserve is now in the process of adding new Alcoa Outdoor Booths.



**"SOLID AND STURDY . . .** that's what Alcoa Booths are, "says Western Reserve General Manager, Nelson Case. "Here's a picture of a booth in Florida that stood up under a 90-mph hurricane which leveled buildings all around it. Our booths are practically vandal-proof, but if a panel should ever be damaged we can easily replace it. The parts are interchangeable."

**"IT TOOK ONLY FOUR HOURS TO PUT UP A BOOTH,"** reports Ted Case. "The booth comes in six subassemblies which locl together into a solid structure. The Alcoa instruction manual was very easy to follow and we also saw the movie about putting up the booths."

**"WASHING IS THE ONLY MAINTENANCE** our Alcoa Booths need," says Ted Case who supervises maintenance for Western Reserve. "Smudges and pencil marks wash right off. The booths stay bright and attractive. We'll never have to paint them or remove rust."

**"WE GOT GOOD PUBLICITY** about our new booths by using the Alcoa Good Will Kit," says Nelson Case. The Good Will Kit, given free with each booth purchase, contains newspaper ad mats, publicity release, free envelope stuffers, radio and TV commercials.

**GET MORE INFORMATION ON ALCOA BOOTHS.** Write for brochure. And ask your jobber how Alcoa Booths can increase your revenues and build customer good will. Aluminum Company of America 1691-D Alcoa Building, Pittsburgh 19, Pa.

WE CHOSE ALCOA ALUMINUM MILL PRODUCTS
ALUMINUM COMPANY OF AMERICA
©ACOA

*Your Guide to the Best in Aluminum Value*

THE ALCOA HOUR
TELEVISION'S FINEST LIVE DRAMA
ALTERNATE SUNDAY EVENINGS

## Table XXIII — Sag and Tension Data — Medium Loading District
## Ankoseal Self-Supporting Telephone Cable Type 775-P-SS (19 Gauge Medium Hard Copper)

| Cable Size (Pairs) | Span Length Feet | Prestressing Sags and Tensions Sag Feet | Prestressing Sags and Tensions Tension Lbs. | Final Sags and Tensions After Installation — Temp. 0° F Sag Feet | Temp. 0° F Tension Lbs. | Temp. 30° F Sag Feet | Temp. 30° F Tension Lbs. | Temp. 60° F* Sag Feet | Temp. 60° F* Tension Lbs. | Temp. 90° F Sag Feet | Temp. 90° F Tension Lbs. | Full Load Characteristics Temp. 15° F** Sag Feet | Full Load Characteristics Temp. 15° F** Tension Lbs. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 50 | 0.11 | 358 | 0.14 | 272 | 0.18 | 217 | 0.24 | 163 | 0.34 | 116 | 0.66 | 326 |
| | 75 | 0.21 | 415 | 0.34 | 260 | 0.42 | 208 | 0.54 | 163 | 0.71 | 123 | 1.29 | 377 |
| | 100 | 0.34 | 460 | 0.62 | 248 | 0.77 | 203 | 0.96 | 163 | 1.20 | 130 | 2.07 | 417 |
| | 125 | 0.49 | 500 | 1.02 | 238 | 1.24 | 196 | 1.51 | 163 | 1.80 | 136 | 2.94 | 459 |
| 6 Pr. | 150 | 0.71 | 500 | 2.13 | 165 | 2.46 | 143 | 2.80 | 126 | 3.13 | 112 | 4.26 | 455 |
| | 175 | 0.96 | 500 | 3.67 | 131 | 4.01 | 120 | 4.37 | 111 | 4.69 | 108 | 5.87 | 455 |
| | 200 | 1.25 | 500 | 5.52 | 114 | 5.87 | 107 | 6.21 | 102 | 6.57 | 96 | 7.60 | 455 |
| | 225 | 1.69 | 500 | 7.57 | 105 | 7.89 | 101 | 8.23 | 97 | 8.55 | 94 | 9.73 | 455 |
| | 250 | 1.96 | 500 | 9.98 | 100 | 10.3 | 97 | 10.6 | 94 | 10.9 | 91 | 12.1 | 455 |
| | 100 | 0.31 | 690 | 0.44 | 479 | 0.56 | 382 | 0.72 | 297 | 0.94 | 225 | 1.52 | 626 |
| | 125 | 0.45 | 740 | 0.72 | 463 | 0.88 | 377 | 1.12 | 297 | 1.41 | 237 | 2.21 | 671 |
| | 150 | 0.60 | 790 | 1.07 | 447 | 1.30 | 367 | 1.61 | 297 | 1.98 | 242 | 2.97 | 718 |
| | 175 | 0.78 | 835 | 1.51 | 431 | 1.82 | 358 | 2.19 | 297 | 2.58 | 252 | 3.83 | 758 |
| | 200 | 0.96 | 880 | 2.08 | 410 | 2.44 | 349 | 2.87 | 297 | 3.32 | 257 | 4.77 | 798 |
| 11 Pr. | 225 | 1.17 | 915 | 2.72 | 397 | 3.16 | 342 | 3.63 | 297 | 4.12 | 262 | 5.78 | 832 |
| | 250 | 1.46 | 915 | 3.88 | 343 | 4.39 | 304 | 4.93 | 271 | 5.46 | 244 | 7.14 | 832 |
| | 275 | 1.76 | 915 | 5.35 | 301 | 5.86 | 275 | 6.44 | 251 | 6.94 | 233 | 8.67 | 832 |
| | 300 | 2.09 | 915 | 7.05 | 273 | 7.59 | 254 | 8.12 | 237 | 8.67 | 223 | 10.4 | 832 |
| | 325 | 2.45 | 915 | 8.78 | 258 | 9.32 | 243 | 9.88 | 230 | 10.4 | 218 | 12.1 | 832 |
| | 100 | 0.32 | 920 | 0.43 | 692 | 0.53 | 553 | 0.68 | 432 | 0.91 | 322 | 1.30 | 835 |
| | 125 | 0.47 | 970 | 0.68 | 676 | 0.84 | 550 | 1.07 | 432 | 1.35 | 340 | 1.93 | 882 |
| | 150 | 0.64 | 1032 | 1.00 | 660 | 1.23 | 539 | 1.54 | 432 | 1.88 | 351 | 2.61 | 938 |
| | 175 | 0.83 | 1080 | 1.41 | 638 | 1.72 | 525 | 2.09 | 432 | 2.50 | 361 | 3.39 | 983 |
| | 200 | 1.09 | 1130 | 1.95 | 603 | 2.30 | 512 | 2.73 | 432 | 3.19 | 370 | 4.24 | 1027 |
| | 225 | 1.27 | 1175 | 2.55 | 583 | 2.97 | 500 | 3.46 | 432 | 3.97 | 376 | 5.17 | 1068 |
| | 250 | 1.51 | 1217 | 3.22 | 570 | 3.73 | 494 | 4.27 | 432 | 4.79 | 384 | 6.18 | 1105 |
| 16 Pr. | 275 | 1.78 | 1250 | 4.05 | 551 | 4.60 | 485 | 5.18 | 432 | 5.74 | 389 | 7.28 | 1138 |
| | 300 | 2.06 | 1285 | 4.93 | 538 | 5.53 | 479 | 6.14 | 432 | 6.75 | 394 | 8.43 | 1168 |
| | 325 | 2.35 | 1320 | 5.94 | 523 | 6.53 | 476 | 7.20 | 432 | 7.83 | 398 | 9.62 | 1200 |
| | 350 | 2.71 | 1330 | 7.23 | 498 | 7.90 | 457 | 8.57 | 422 | 9.20 | 393 | 11.1 | 1210 |
| | 375 | 3.04 | 1330 | 8.90 | 467 | 9.55 | 435 | 10.2 | 408 | 10.8 | 385 | 12.7 | 1210 |
| | 400 | 3.54 | 1330 | 10.6 | 444 | 11.3 | 418 | 12.0 | 396 | 12.6 | 376 | 14.5 | 1210 |
| | 425 | 3.99 | 1330 | 12.6 | 425 | 13.2 | 405 | 13.9 | 387 | 14.5 | 369 | 16.4 | 1210 |
| | 450 | 4.47 | 1330 | 14.6 | 412 | 15.3 | 395 | 15.9 | 379 | 16.5 | 365 | 18.5 | 1210 |
| | 475 | 4.98 | 1330 | 16.8 | 400 | 17.4 | 386 | 18.0 | 372 | 18.7 | 359 | 20.6 | 1210 |
| | 100 | 0.31 | 1350 | 0.37 | 1150 | 0.46 | 917 | 0.61 | 702 | 0.83 | 507 | 1.01 | 1225 |
| | 125 | 0.47 | 1410 | 0.59 | 1115 | 0.73 | 900 | 0.94 | 702 | 1.24 | 536 | 1.52 | 1280 |
| | 150 | 0.64 | 1470 | 0.87 | 1092 | 1.08 | 884 | 1.36 | 702 | 1.71 | 558 | 2.09 | 1338 |
| | 175 | 0.85 | 1515 | 1.23 | 1061 | 1.49 | 873 | 1.85 | 702 | 2.27 | 574 | 2.76 | 1378 |
| | 200 | 1.08 | 1565 | 1.65 | 1028 | 2.00 | 848 | 2.42 | 702 | 2.89 | 587 | 3.50 | 1422 |
| | 225 | 1.33 | 1615 | 2.15 | 998 | 2.58 | 833 | 3.07 | 702 | 3.57 | 603 | 4.28 | 1468 |
| | 250 | 1.59 | 1660 | 2.78 | 953 | 3.26 | 815 | 3.79 | 702 | 4.37 | 608 | 5.17 | 1510 |
| 26 Pr. | 275 | 1.87 | 1710 | 3.44 | 933 | 3.82 | 840 | 4.58 | 702 | 5.18 | 620 | 6.08 | 1552 |
| | 300 | 2.20 | 1735 | 4.22 | 903 | 4.82 | 791 | 5.45 | 702 | 6.09 | 627 | 7.11 | 1577 |
| | 325 | 2.53 | 1770 | 5.09 | 883 | 5.73 | 785 | 6.48 | 702 | 7.05 | 638 | 8.17 | 1610 |
| | 350 | 2.88 | 1805 | 6.07 | 858 | 6.73 | 773 | 7.43 | 702 | 8.08 | 645 | 9.32 | 1640 |
| | 375 | 3.24 | 1840 | 7.10 | 843 | 7.83 | 767 | 8.54 | 702 | 9.25 | 649 | 10.5 | 1675 |
| | 400 | 3.63 | 1870 | 8.19 | 828 | 8.97 | 759 | 9.70 | 702 | 10.4 | 653 | 11.8 | 1700 |
| | 425 | 4.05 | 1890 | 9.48 | 813 | 10.2 | 752 | 11.0 | 702 | 11.8 | 658 | 13.2 | 1720 |
| | 450 | 4.48 | 1915 | 10.8 | 803 | 11.5 | 750 | 12.3 | 702 | 13.1 | 662 | 14.6 | 1742 |
| | 475 | 4.93 | 1940 | 12.2 | 793 | 13.0 | 745 | 13.8 | 702 | 14.5 | 665 | 16.0 | 1765 |

*Also no load characteristics.

**With one-quarter inch ice and four-pound wind.

Based on data Copyrighted 1953 by Ansonia Wire & Cable Co. All rights reserved.

## Table XXIV Sag and Tension Data — Light Loading District
## Ankoseal Self-Supporting Telephone Cable Type 775-P-SS (19 Gauge Medium Hard Copper)

| Cable Size (Pairs) | Span Length Feet | Prestressing Sags and Tensions | | Final Sags and Tensions After Installation | | | | | | | | Full Load Characteristics | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Temp. 0° F | | Temp. 30° F | | Temp. 60° F* | | Temp. 90° F | | Temp. 30° F** | |
| | | Sag Feet | Tension Lbs. | Sag Feet | Tension Lbs. | Sag Feet | Tension Lbs. | Sag Feet | Tension Lbs. | Sag Feet | Tension Lbs. | Sag Feet | Tension Lbs. |
| | 50 | 0.14 | 285 | 0.14 | 272 | 0.18 | 217 | 0.24 | 163 | 0.34 | 116 | 0.50 | 259 |
| | 75 | 0.28 | 314 | 0.34 | 260 | 0.42 | 208 | 0.54 | 163 | 0.71 | 123 | 1.01 | 285 |
| | 100 | 0.46 | 343 | 0.62 | 248 | 0.77 | 203 | 0.96 | 163 | 1.20 | 130 | 1.65 | 312 |
| | 125 | 0.66 | 370 | 1.02 | 238 | 1.24 | 196 | 1.51 | 163 | 1.80 | 136 | 2.39 | 336 |
| 6 Pr. | 150 | 0.92 | 385 | 1.57 | 225 | 1.84 | 192 | 2.17 | 163 | 2.50 | 141 | 3.25 | 350 |
| | 175 | 1.16 | 413 | 2.23 | 215 | 2.59 | 186 | 2.95 | 163 | 3.33 | 144 | 4.22 | 375 |
| | 200 | 1.45 | 430 | 3.09 | 204 | 3.45 | 182 | 3.86 | 163 | 4.26 | 146 | 5.29 | 391 |
| | 225 | 1.89 | 447 | 4.00 | 198 | 4.43 | 179 | 4.88 | 163 | 5.32 | 149 | 6.45 | 406 |
| | 250 | 2.14 | 458 | 5.09 | 193 | 5.58 | 176 | 6.04 | 163 | 6.51 | 151 | 7.75 | 417 |
| | 100 | 0.39 | 544 | 0.44 | 479 | 0.56 | 382 | 0.72 | 297 | 0.94 | 225 | 1.22 | 494 |
| | 125 | 0.57 | 580 | 0.72 | 463 | 0.88 | 377 | 1.12 | 297 | 1.41 | 237 | 1.79 | 527 |
| | 150 | 0.78 | 608 | 1.07 | 447 | 1.30 | 367 | 1.61 | 297 | 1.98 | 242 | 2.46 | 552 |
| | 175 | 1.02 | 637 | 1.51 | 431 | 1.82 | 358 | 2.19 | 297 | 2.58 | 252 | 3.20 | 578 |
| | 200 | 1.29 | 657 | 2.08 | 410 | 2.44 | 349 | 2.87 | 297 | 3.32 | 257 | 4.05 | 597 |
| 11 Pr. | 225 | 1.58 | 680 | 2.72 | 397 | 3.16 | 342 | 3.63 | 297 | 4.12 | 262 | 4.97 | 618 |
| | 250 | 1.90 | 703 | 3.44 | 387 | 3.94 | 337 | 4.48 | 297 | 5.01 | 268 | 5.93 | 638 |
| | 275 | 2.24 | 718 | 4.33 | 373 | 4.86 | 332 | 5.43 | 297 | 5.98 | 270 | 7.03 | 652 |
| | 300 | 2.60 | 735 | 5.29 | 363 | 5.87 | 326 | 6.46 | 297 | 7.06 | 272 | 8.18 | 667 |
| | 325 | 3.00 | 750 | 6.36 | 353 | 6.93 | 322 | 7.58 | 297 | 8.22 | 275 | 9.43 | 681 |
| | 350 | 3.44 | 765 | 7.56 | 347 | 8.18 | 320 | 8.79 | 297 | 9.42 | 278 | 10.7 | 695 |
| | 100 | 0.39 | 750 | 0.43 | 692 | 0.53 | 553 | 0.68 | 432 | 0.91 | 322 | 1.10 | 680 |
| | 125 | 0.58 | 790 | 0.68 | 676 | 0.84 | 550 | 1.07 | 432 | 1.35 | 340 | 1.63 | 719 |
| | 150 | 0.79 | 830 | 1.00 | 660 | 1.23 | 539 | 1.54 | 432 | 1.88 | 351 | 2.23 | 754 |
| | 175 | 1.05 | 857 | 1.41 | 638 | 1.72 | 525 | 2.09 | 432 | 2.50 | 361 | 2.95 | 778 |
| | 200 | 1.33 | 885 | 1.95 | 603 | 2.30 | 512 | 2.73 | 432 | 3.19 | 370 | 3.72 | 804 |
| | 225 | 1.63 | 913 | 2.55 | 583 | 2.97 | 500 | 3.46 | 432 | 3.97 | 376 | 4.57 | 828 |
| | 250 | 1.96 | 938 | 3.22 | 570 | 3.73 | 494 | 4.27 | 432 | 4.79 | 384 | 5.51 | 852 |
| 16 Pr. | 275 | 2.32 | 962 | 4.05 | 551 | 4.60 | 485 | 5.18 | 432 | 5.74 | 389 | 6.52 | 873 |
| | 300 | 2.70 | 983 | 4.93 | 538 | 5.53 | 479 | 6.14 | 432 | 6.75 | 394 | 7.59 | 894 |
| | 325 | 3.13 | 995 | 5.94 | 523 | 6.53 | 476 | 7.20 | 432 | 7.83 | 398 | 8.72 | 913 |
| | 350 | 3.54 | 1015 | 7.04 | 512 | 7.73 | 468 | 8.37 | 432 | 9.00 | 401 | 10.0 | 922 |
| | 375 | 3.92 | 1030 | 8.28 | 501 | 8.88 | 464 | 9.64 | 432 | 10.3 | 404 | 11.4 | 935 |
| | 400 | 4.51 | 1043 | 9.52 | 494 | 10.2 | 463 | 10.9 | 432 | 11.6 | 408 | 12.7 | 948 |
| | 425 | 5.0 | 1060 | 10.9 | 487 | 11.6 | 459 | 12.4 | 432 | 13.1 | 410 | 14.2 | 962 |
| | 450 | 5.. | 1066 | 12.5 | 481 | 13.2 | 454 | 13.9 | 432 | 14.6 | 412 | 15.8 | 969 |
| | 475 | 6.15 | 1078 | 14.1 | 474 | 14.8 | 452 | 15.6 | 432 | 16.2 | 414 | 17.5 | 980 |
| | 100 | 9.37 | 1148 | 0.37 | 1150 | 0.46 | 917 | 0.61 | 702 | 0.83 | 507 | 0.85 | 1042 |
| | 125 | 0.56 | 1172 | 0.59 | 1115 | 0.73 | 900 | 0.94 | 702 | 1.24 | 536 | 1.30 | 1066 |
| | 150 | 0.78 | 1217 | 0.87 | 1092 | 1.08 | 884 | 1.36 | 702 | 1.71 | 558 | 1.80 | 1107 |
| | 175 | 1.04 | 1248 | 1.23 | 1061 | 1.49 | 873 | 1.85 | 702 | 2.27 | 574 | 2.39 | 1134 |
| | 200 | 1.33 | 1270 | 1.65 | 1028 | 2.00 | 848 | 2.42 | 702 | 2.89 | 587 | 3.07 | 1155 |
| | 225 | 1.65 | 1298 | 2.15 | 998 | 2.58 | 833 | 3.07 | 702 | 3.57 | 603 | 3.80 | 1180 |
| | 250 | 2.00 | 1320 | 2.78 | 953 | 3.26 | 815 | 3.79 | 702 | 4.37 | 608 | 4.62 | 1200 |
| 26 Pr. | 275 | 2.38 | 1345 | 3.44 | 933 | 3.82 | 840 | 4.58 | 702 | 5.18 | 620 | 5.49 | 1222 |
| | 300 | 2.80 | 1365 | 4.22 | 903 | 4.82 | 791 | 5.45 | 702 | 6.09 | 627 | 6.46 | 1240 |
| | 325 | 3.23 | 1385 | 5.09 | 883 | 5.73 | 785 | 6.48 | 702 | 7.05 | 638 | 7.45 | 1260 |
| | 350 | 3.71 | 1402 | 6.07 | 858 | 6.73 | 773 | 7.43 | 702 | 8.08 | 645 | 8.53 | 1277 |
| | 375 | 4.18 | 1425 | 7.10 | 843 | 7.83 | 767 | 8.54 | 702 | 9.25 | 649 | 9.66 | 1295 |
| | 400 | 4.70 | 1440 | 8.19 | 828 | 8.97 | 759 | 9.70 | 702 | 10.4 | 653 | 10.9 | 1310 |
| | 425 | 5.27 | 1452 | 9.48 | 813 | 10.2 | 752 | 11.0 | 702 | 11.8 | 658 | 12.2 | 1320 |
| | 450 | 5.83 | 1470 | 10.8 | 803 | 11.5 | 750 | 12.3 | 702 | 13.1 | 662 | 13.6 | 1335 |
| | 475 | 6.48 | 1475 | 12.2 | 793 | 13.0 | 745 | 13.8 | 702 | 14.5 | 665 | 14.7 | 1340 |

*Also no load characteristics.

**For no ice and nine-pound wind.

Based on data Copyrighted 1953 by Ansonia Wire & Cable Co. All rights reserved.

Charts are obtainable from the manufacturer which provide the same data with closer tolerances.

### *Prestressing Tensions and Sags*

PRESTRESSING of the cable is important to eliminate the nonelastic stretch in the cable conductors and assure a more uniform distribution of the stress under operating conditions. This prestressing operation is accomplished after raising or pulling the cable in position along supports placed on the poles.

The amount of required prestressing is given in the first two columns of *Tables XXII, XXIII and XXIV* under the heading "Prestressing Sags and Tensions." It is determined by measuring the sag or using a dynamometer to check the tension as the cable is pulled up. When the proper sag or tension is obtained, the cable is slacked off to the final sag or tension figure for the nearest air temperature indicated in the tables.

### *Attaching Cable to Poles*

CHANNELL cable supports are employed to attach the cable to poles. They provide a snubbing action which holds the cable firmly and at the same time, distributes the tension over a wide area of the cable. *Figure* 262 illustrates the methods of supporting a 6-pair Ankoseal Type 775-P-SS cable. In *Figure* 262 *(A)* is indicated the method of attaching the Channell support, using a through bolt in the top hole and a drive screw through the bottom hole. In this illustration, a Channell No. 450 cable support is employed for this size cable. Other sizes of supports are available for the larger sizes of Ankoseal self-supporting cable.

*Figures* 262 *B through F* show the steps in placing the cable on a support in straight sections of the cable lead. In B the cable has been prestressed and slacked off to the final sag or tension value and is held in place with a pulling grip while forming the loop for dropping down preparatory to placing on the first turn of the support as shown in C.

This loop is placed on the first turn of the support and along the upper guide as indicated in D, removing as much slack as possible between the pulling grip and the front turn of the support. (It may be necessary to increase the final tension slightly to compensate for the remaining slack between the pulling grip and the support.) In E the cable is being placed in the second turn of the support and in F, the cable is being pulled up in the next span.

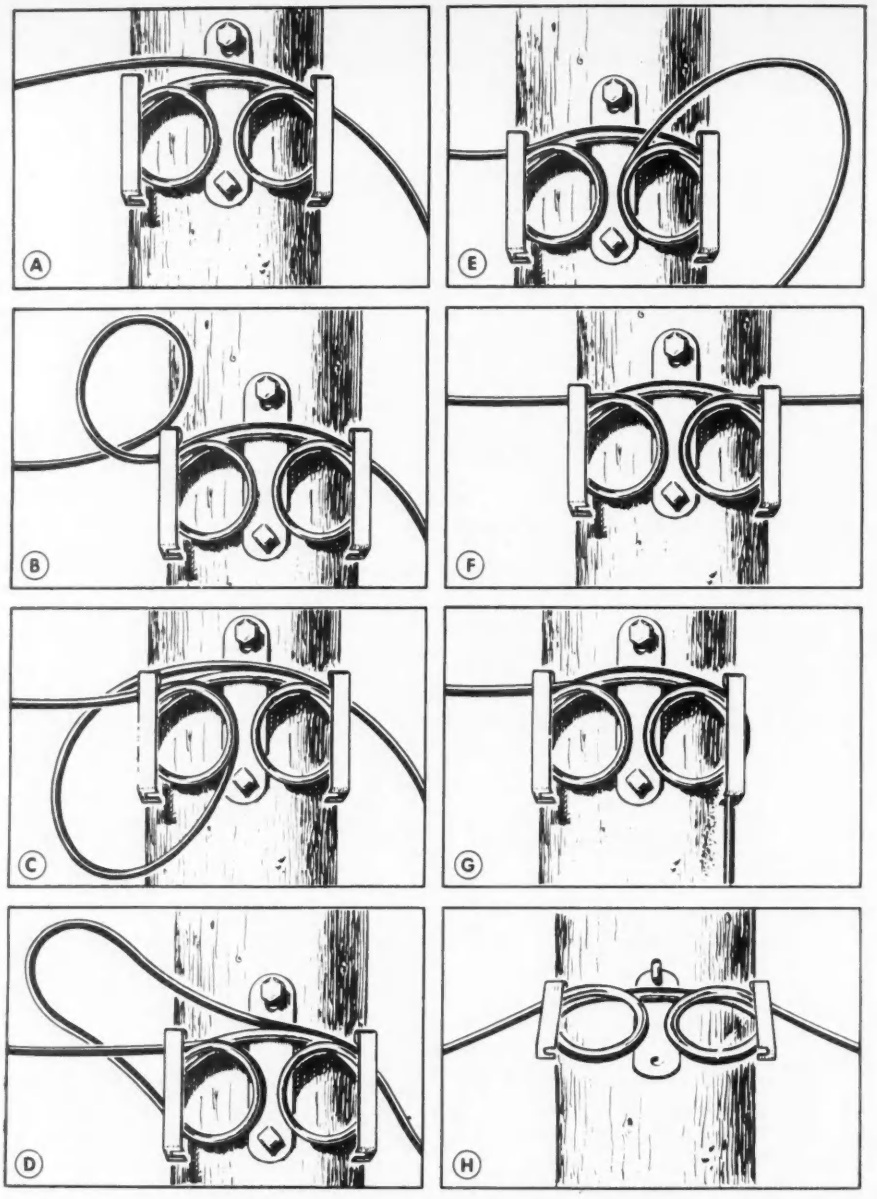



**FIG. 262:—Steps in placing Ankoseal Type 775-P-SS 6-Pair self-supporting cable on Channell No. 450 Type cable support in straight sections of the cable lead, at dead end points, and at corners in the lead. (Data copyrighted 1953 by Ansonia Wire & Cable Corp. All rights Reserved.)**

In *Figure* 262 *(G)*, the cable is shown in the deadend position. In H, the method of mounting the Channell support on a hook type through bolt is indicated. The cable is installed in the regular manner and the support is allowed to assume the position shown after the cable is tensioned in both directions.

It was mentioned that the larger sizes of the Ankoseal self-supporting cable required the use of other sizes of Channell supports. These are the Nos. 530, 660, and 750 type supports with single turn for 11-, 16-, and 26-pair self-supporting cables.

Where terminals are to be placed, Channel terminal supports Nos. 450-T, 530-T, 660-T, and 750-T are employed for the four sizes of Ankoseal self-supporting cables. These supports are provided with a cross member upon which a terminal may be placed. They are mounted in the same manner as the regular type of cable support and the cable is placed on the support in the same manner except that a sufficient amount of cable is left for connection in the terminal.

For dead ending the 11-, 16-, and 26-pair self-supporting cable, the No.s 530-T, 660-T, and 750-T sup-

ports are employed, the method of installation being the same as shown in *Figure* 262 (*B*) *through* (*E*) *and* (*G*).

Mid-span splices are not practical in self-supporting cable and the manufacturer recommends that splices be omitted in this type of construction. Cable terminals can be used for splicing the cable or splices can be made and strapped to the pole in a vertical position.—*To Be Continued.*

*Questions on Part IX* — Self Supporting Cables with high strength conductors; Characteristics of Copperweld Self-Supporting Communication Cables — Sagging and Tensioning Data; Self-Supporting Telephone Cables with Medium Hard Drawn Copper Conductors — Stringing Sags and Tensions; Prestressing Tensions and Sags; Attaching Cables to Poles.

(1) Why do telephone cables ordinarily require the use of a steel messenger to support them?

(2) How is the self-supporting feature obtained in cables of this class?

(3) Describe the grip type of cable support. What is employed to support pole-to-pole spans of self-supporting cable?

(4) Explain the meaning of the term "10 per cent conductivity."

(5) What would be the stringing sag for a 250 ft. span of 11-pair self-supporting cable with 19 gauge Copperweld conductors in the medium loading district? The resulting tension?

(6) What other class of self-supporting cable for telephone use is available? What size are the conductors and how many pairs are there in each of the four sizes of this type of cable?

(7) Why should cable with medium hard drawn copper conductors be prestressed?

(8) Describe the types of supports used for the Ansonia Wire and Cable Company's self-supporting cable.

(9) Why are mid-span splices impractical for self-supporting types of telephone cable? How would you join together two sections of self-supporting cable?

(10) You are in the heavy loading district. Check the sag and tension table for the following information: Sixteen-pair self-supporting cable, 200 ft. spans, prestressing sags and tensions, final sags and tensions, and full-load characteristics. How long would your poles have to be, assuming 5 foot digging depth and minimum for 14 foot clearance?

## Book Review

*"Organizing For Effective Systems Planning And Control:" Published by the American Management Association, 1515 Broadway, Times Square, New York 36, N. Y. Special Report No. 12; 192 pages; Price* $4.50.

Systems planning and control can be a major factor in the success of an organization. In fact, systems work in many companies includes the coordination of *all* managerial effort for improved efficiency and increased profit. The systems department may participate in all management activities, ranging from paper work procedures to the organization of top company policies.

How this is actually done is described in this Special Report of the American Management Association. Top executives of *Lockheed Aircraft Corp.* and *Cleveland Electric Illuminating Co.* explain the operation of their systems departments. In detailed presentations, they discuss their companies' unique, over-all approach to planning and control.


OVER 6000 MURPHY CABLE TESTERS NOW IN USE

THE MURPHY ONE MAN CABLE TESTER

The New Model CMUW

Model TTB
Tag & Terminating Board

NOW
A SPLICER ALONE
can identify non-working cable pairs three times faster than two men could heretofore.
DISTANCE
2 feet to 40 miles

MODEL CMUW

THE COMBINATION TAG— and TERMINATING BOARD
Showing the cable pairs properly connected.
TIPS HORIZONTALLY
RINGS VERTICALLY

THE NEW
MODEL CMUW Weatherproof, Gasket Sealed Meter Unit is now a part of every Model C shipped.

*Patents pending in United States and Foreign Countries*
SHIPPING SCHEDULES 60-90 days

We Sell DIRECT ONLY to Domestic Customers

FOREIGN Customers write DIRECT or see your Export Agent

MURPHY ENGINEERING LABORATORIES, INC.
4419 TULSA STREET, Phone OVerland 2-4000, HOUSTON 24, TEXAS

**A TE&M Service Department**

# NEW PRODUCTS

**TE&M's New Product Editor enlarged his department for the "Spring Construction & Maintenance Issue" and selected items of particular interest to you at this time of the year. Complete data on each New Product may be obtained by using the Readers' Service Coupon you'll find on page 79.**

## "Line-A-Pole"

LINE-A-POLE CO. has announced a new device for use in the accurate alignment of utility poles.

The new device is the Line-A-Pole and was invented by R. N. Jackson, owner of the Jax Construction Co., and the Line-A-Pole Co.

Mr. Jackson says the device will cut the time on a pole aligning job by 25 per cent and will greatly increase the accuracy in the alignment of the poles.

One man attaches the clamp-like Line-A-Pole on the pole at eye level. The device has two pendulums on it which, when the pole is properly aligned, hang vertically.

The only line-sighting the single workman must worry about is to see that the butt of the pole is in line with the other poles in the series.

A patent now is pending. The device will be marketed in three sizes, telephone pole, distribution pole and transmission pole size. They will sell for between $35 and $37.50. For Complete data, *Check NP* 128.

**A STRAIGHT LINE: — R. N. Jackson demonstrates a device he invented which he claims will be a boon in the proper alignment of utility poles. The device, the Line-A-Pole, is shown here attached to a telephone pole. Pendulums on the clamp-like device tell when the pole is in true alignment, Jackson says.** ***Abeline (Texas) Reporter News.***

## Parallel Line Wire

THE ANSONIA WIRE & CABLE CO., Ashton, R. I., has announced that its new plant is now producing Parallel Line Wire. Ankoseal Parallel Line Wire with two copperweld conductors is insulated with tough block polyethylene compound for continued service under the worst conditions.

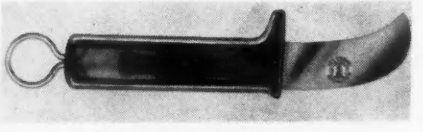
Ankoseal Parallel Line Wire can be installed in span lengths to absolute maximum, depending on requirements, with complete security even to heavy loading zones. The line wire is easily transposed; Simply twisting the wire the desired number of turns between poles accomplishes transposition. High quality transmission characteristics can be obtained and cross talk entirely eliminated in rural areas.

**New Line Wire**

Ansonia Ankoseal Two Conductor Copperweld Parallel Line Wire is available in #12 or #14 AWG in 5,000 or 15,000 foot reels. — For complete data, *Check New Product* 129.

## New Skinning Knife

MATHIAS KLEIN & SONS offers a new skinning knife with a number of interesting features. The handle is of flame-resistant plastic with high dielectric qualities. The blade has been redesigned for better cutting and an enlarged ring at the end permits easy attachment to a snap. The plastic handle has been molded in a finger guard to prevent accidents. For information, *Check New Product* 130.



**NEW Skinning Knife**

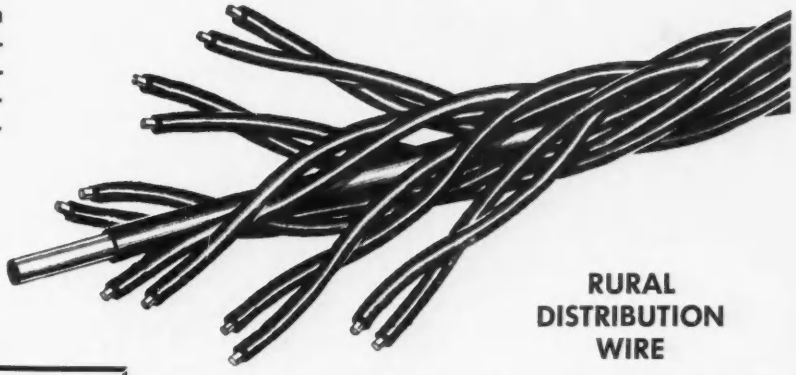
## New Aerial Ladder

A NEW AERIAL LADDER that can be raised, lowered and rotated by remote platform controls is now available from J. H. Holan Corp.

The new unit, known as the Series 2300 Hydraulic Ladder, is an adapta-

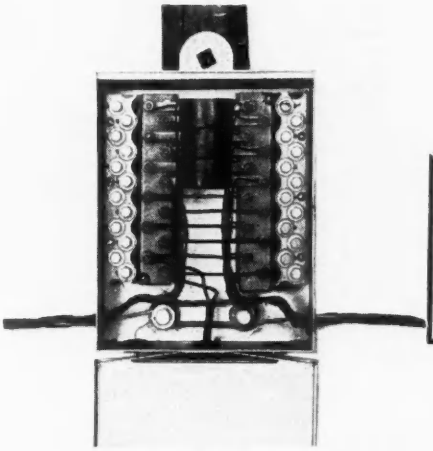
# BUCKEYE HAS YOUR SUPPLIES FOR SPRING CONSTRUCTION

**The right materials at the time you need them . . . Buckeye maintains large stocks of all materials to provide you with fast, efficient service on all orders. Let us know your requirements, we possibly have it in stock for immediate shipment.**



## RURAL DISTRIBUTION WIRE

**3, 6, 11, 16 pr., 19 ga conductors in either black or color coded. The ideal wire for expansion at low cost. Also Urban Distribution in 16 pr., 24 ga. conductors. By Superior or PWC.**



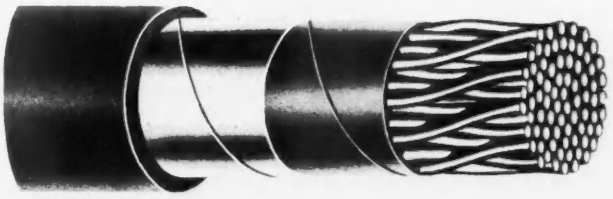
**Copperweld Line Wire**
**Copper Line Wire**
**Steel Line Wire**
**Drop Wire**
**Strand**

## TYPE 177 TERMINAL LOADING CASE

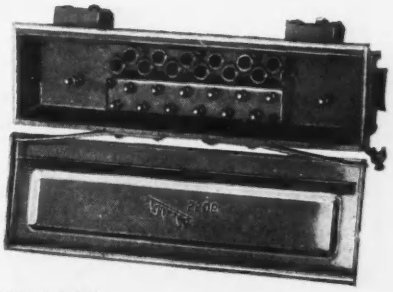
**By CEECO for use with Rural Distribution Wire. 6,11 and 16 pair capacity, protected or unprotected. Designed to accommodate loading coils of 88MH or 44MH inductance.**

## "C" RURAL PARALLEL LINE WIRE

**Two No. 14 or two No. 12 Copperweld conductors or two .083" galvanized steel conductors in Polyethylene insulation. Replaces open wire construction at less cost.**



**Cable Supplies**
**Equipment**
**Hardware**
**Tools**
**Insulators**
**Poles & Arms**

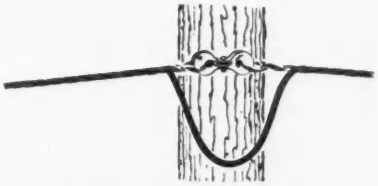


## TEL-C AERIAL OR DUCT CABLE

**Superior cable in 24,22 or 19 AWG conductors, 6 thru 404 pairs. Irradiated Polyethylene tape, aluminum shield, Polyethylene jacket. Also other cables on hand to meet your particular requirements.**

## WIRE TERMINALS

**Reliable and Cook protected and unprotected terminals. All types in stock.**



## PREFORMED PRODUCTS

**Deadends, grips and supports for all wires and strands. Preformed for fast installation.**

## "C" RURAL TERMINAL

**Drop wire terminal by Superior for making drrops from "C" Rural Parallel Line Wires.**

## STRAND TERMINALS

**11,16 and 26 pair, protected or unprotected, plastic or lead stubs. Complete line of Cook and Reliable Terminals.**

# BUCKEYE TELEPHONE & SUPPLY CO.

**P. O. Box 5707** **Phone HU 8-0655** **Columbus 21, Ohio**

**First commercial communication** facilities on Ocracoke Island come with the laying of Anaconda direct-burial cable.

# Anaconda telephone cable beats

**Wind-swept Ocracoke Island**—home for 550 residents—lies 20 miles across Pamlico Sound from Engelhard, N. C. Anaconda cable makes possible all telephone exchange operations on 8-by-2-mile sandspit.

**Carolina Telephone and Telegraph Company** men cut Anaconda Direct-burial Telephone Cable for a pole connection. Cable lengths were made "to fit" to terminal locations.

Because of quicksand nature of soil and its tendency to crumble, a special cable plow had to be designed to do the job.

# hurricanes on Ocracoke Island

**Up hurricane alley, Ocracoke Island gets telephone service for the first time—with Anaconda direct-burial cable.**

Since the days of Blackbeard, the pirate, in the early 1700's, Ocracoke Island inhabitants have been without direct communication with the mainland, 20 miles across wind-lashed Pamlico Sound to North Carolina.

Early in 1956, Carolina Telephone and Telegraph Company remedied this situation with a radio-telephone hookup. But not without a battle from Mother Nature.

Hurricanes sometimes whirl onto the island with speeds up to 125 miles per hour. And corrosive salt spray, sand-blast action of the winds, together with severe lightning conditions had to be contended with.

Solution was Anaconda Direct-burial Telephone Cable. This tough cable—with its special Anaconda polyethylene jacket—proved just the match for corrosive soil conditions, moisture and abrasive sand.

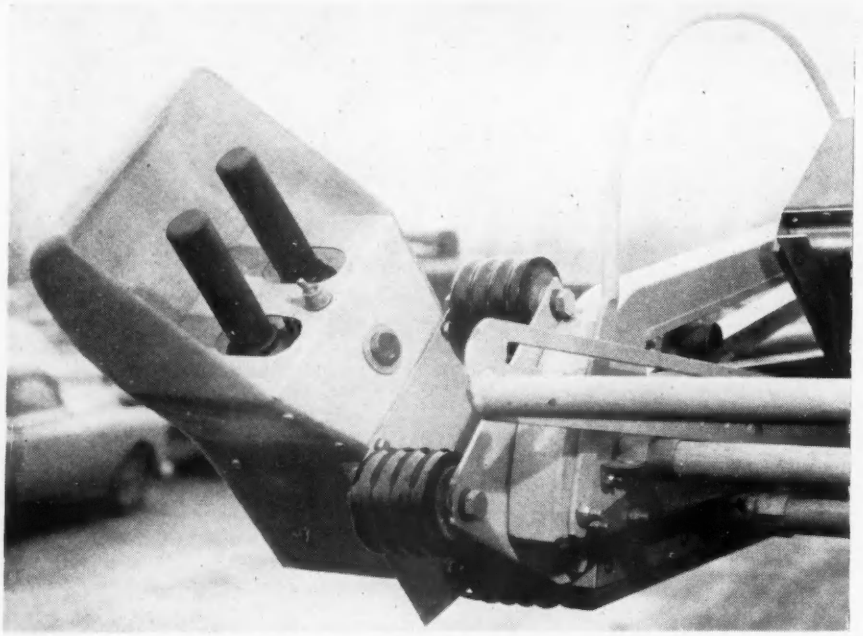
Whatever *your* needs, you, too, will find a good answer to your problems among Anaconda 1) Aerial and Duct cable, 2) Self-supporting cable, 3) Direct-burial cable, 4) Rural and urban distribution wire; or 5) Anaconda paper-lead cable.

*Phone or write:* Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y., or any of our 27 District Offices. There's a qualified telephone-cable expert ready to help you. 57310

UNITED STATES INDEPENDENT TELEPHONE ASSOCIATION

**Phone the Man from ANACONDA®**

**for TELEPHONE CABLE**



**CLOSE-UP of remote control station for raising, lowering and rotating new Holan Series 2300 Ladder from the platform. Left handle is for rotation, right handle for raising and lowering. The toggle switch turns the control system on and off. The push-button is for emergency stops.**

tion of Holan's Series 2100 All-Hydraulic Ladder. However, the 2300 provides accurate spotting, throttling and speed control from the platform as well as from the ground.

Platform control is provided by a Holan ECH (Electric Controlled Hydraulics) System which consists of electric switches, relays, low voltage motors and a closed center hydraulic valve.

To attain best operation, remote control handles are depressed and moved back and forth from center to stop in the direction of the desired movement until proper speed is reached. Then, the still-depressed work handle is returned to center and held until the ladder approaches the work area.

The Series 2300 Ladder can be stopped suddenly by simply releasing the handle. A number of fast reverse movements brings the Ladder to a more gradual stop and avoids excessive strain on the rotating mechanism or ladder section. An emergency-stop pushbutton, connected to the pedestal controls, is located just below the remote control levers.

Like the Holan Series 2100 Ladder, the 2300 rotates the full 360 degrees and elevates to a 75-degre angle. It is available with maximum ground-to-platform heights of 27, 31 or 35 feet. Hydraulic power is generated by a power take-off or separate engine-driven pump.

Extension and retraction of the Series 2300 fly ladder are controlled only at the base — by one of the three main control levers.

For further information, *Check New Product* 131.

## Degreaser Spray

GREASE, oil, carbon, tar, gums and similar difficult to remove substances can now be easily, quickly and safely removed by a new aerosol degreaser that is designed for use on all types of machinery and electrical equipment. The manufacturer, Stewart-Hall Chemical Corp., states — "Simply spray *Zipp* on the area to be cleaned and within a minute you can either wipe the object clean with a rag, or, if not electrical, hold it under a water faucet and rinse it off . . ."

According to the manufacturer *Zipp* is excellent for cleaning motors and other electrical equipment, oily machinery, and other mobile equipment. It will remove greasy stains from painted surfaces, and concrete floors.

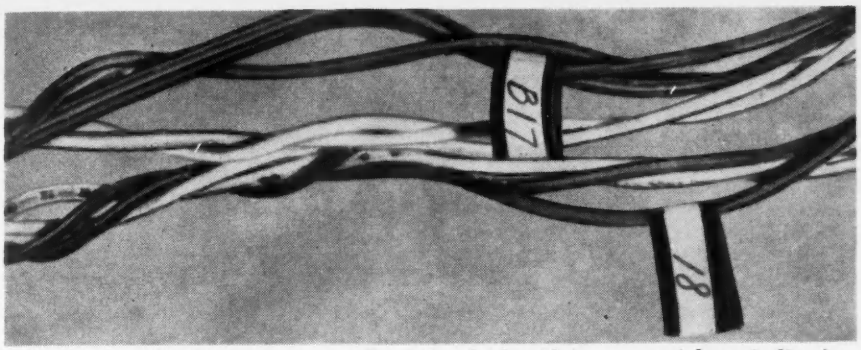
*Zipp* dries rapidly, leaving no film or vapor. It will not short electrical equipment, is non-corrosive and non-flammable, and is safe for painted surfaces. It does not contain carbon tetrachloride. Packing is 16 ounces net weight per can. For additional information. *Check New Product* 132.

## "Write-On-It" Tape

LABELON TAPE CO., INC. reports an increased demand for its pre-cut lengths of Labelon "Write on it" Tape. Though the tape is usually sold and used with the standard plastic dispensers, pre-cut lengths mounted on plastic backing sheets have become popular recently for a variety of special uses.

Labelon reports that a large telephone company is now supplying all of its service men with bundles of the pre-cut tape for use in flagging circuits, identifying material, indicating temporary telephone numbers,

**NEW DEGREASER is designed for use on all types of machinery and electrical equipment.**




**PRE-CUT LABELON speeds up the job of identifying material or indicating temporary telephone numbers.**

marking underground wiring, and labeling tools. The pre-cut lengths are furnished in bundles of one hundred, for easy carrying.

In addition, the pre-cut Labelon has the advantage of being in a predetermined length, easy to carry and use anywhere. It is also easier to write on, since the notation may be made before the backing is stripped off. This is especially important in applications such as the flagging of underground wires, where working conditions preclude the use of roll Labelon. —For complete details, *Check New Product* 133.

## New Soldering Iron

THE PREST-O-LITE 406 Medium Soldering Iron, a new air-acetylene unit designed to handle all but the heaviest soldering jobs in sheet metal, electrical, plumbing, and plant maintenance shops, has been introduced

**THE PREST-O-LITE 406 Medium Soldering Iron is available with pointed or chisel-type head.**

by Linde Air Products Co., a Division of Union Carbide & Carbon Corp. Operating on clean-burning acetylene, the 406 heats up to full working temperature in less than two minutes, and will do the work of a pair of old-fashioned furnace-heated 3-lb. irons or a 880-watt electric iron.

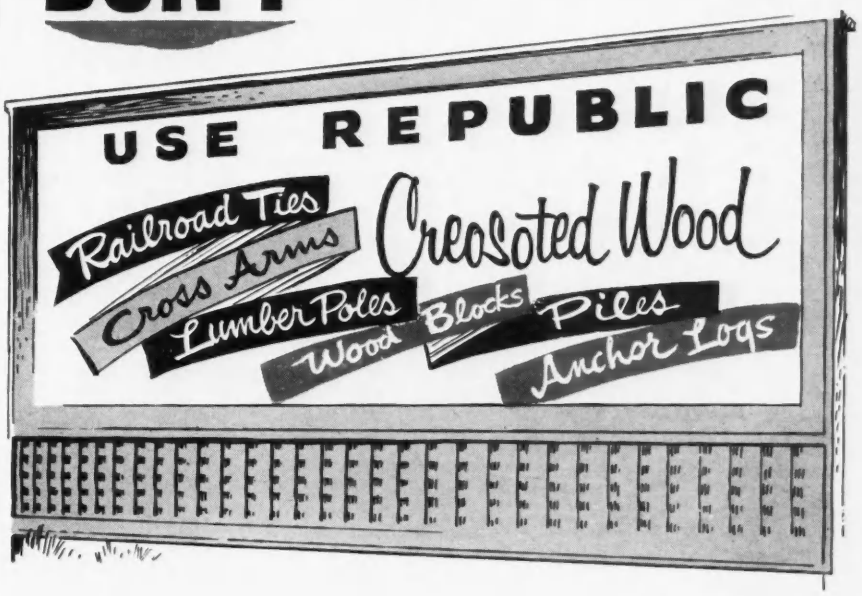
With its form-fit handle and convenient thumb rest, the 406 provides a firm, comfortable grip and unusual ease of operation in any working position. Stainless steel stem and tube-within-a-tube construction retard heat conduction to the handle, assuring maximum operator comfort even after prolonged use. A needle valve at the rear of the 406 Handle makes possible precise flame adjustment without overheating the soldering copper.

The 406 Medium Soldering Iron is available with interchangeable pointed or chisel-edge copper soldering heads. — For Complete Data. *Check New Product* 134.

## Manhole Guard Rails

NEW GUARD RAILS for the protection of men working underground have been announced by T. J. Cope, Inc. The guard rails are made of steel pipe and tubing with all fixed joints welded. Many are equipped

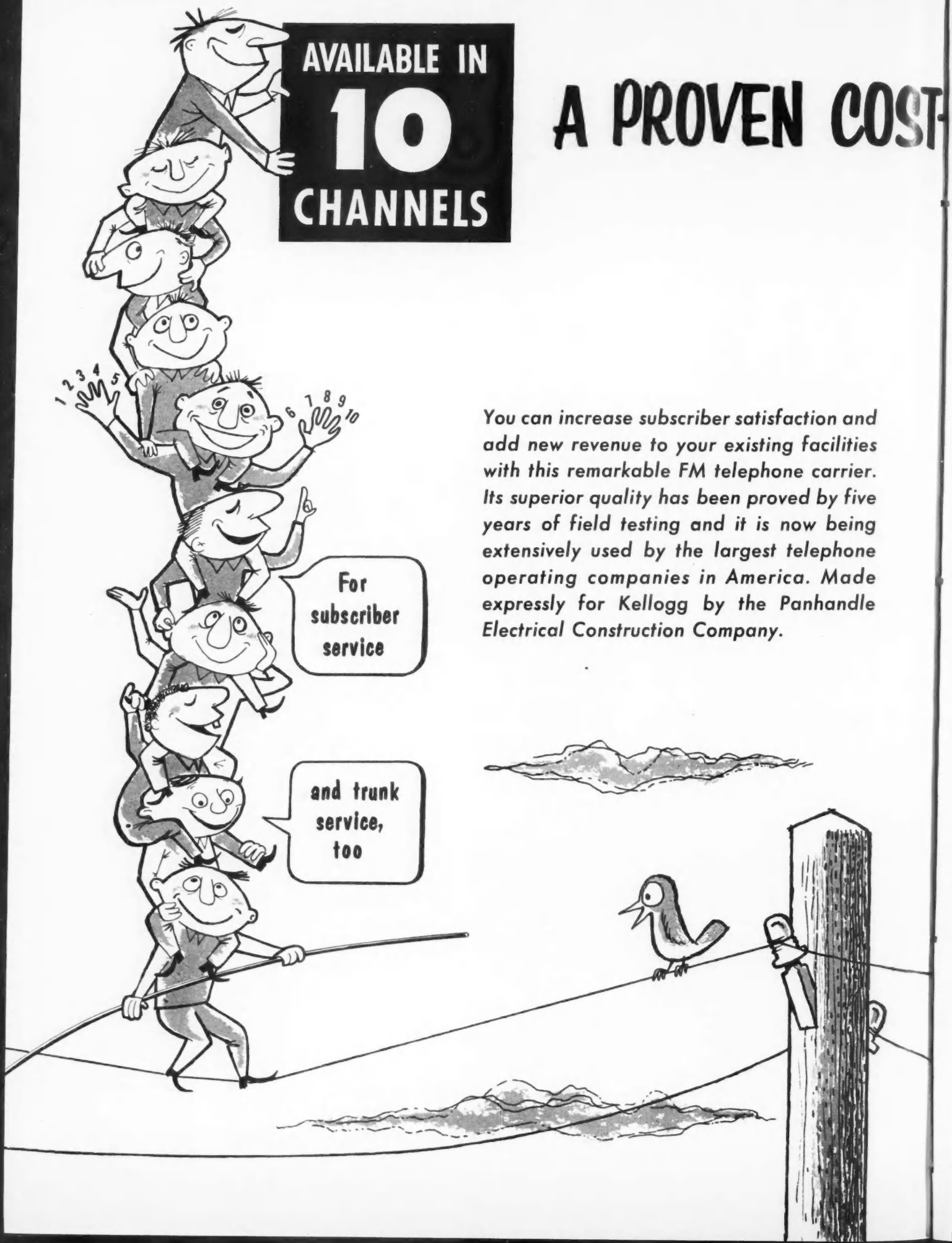
DON'T GAMBLE WITH TIME...




Play your cards straight and make an investment in wood, properly creosoted by REPUBLIC. The record of long service-life (up to 70 years in some cases) proves the benefit of using pressure-creosoted wood. Republic Creosoted Products resist decay in all climates (in acid or alkaline soils) and attack by insects and fungi. This makes REPUBLIC CREOSOTED WOOD a must to economy-minded buyers.

Republic CREOSOTED PRODUCTS

REPUBLIC CREOSOTING COMPANY
MERCHANTS BANK BUILDING · INDIANAPOLIS 4, INDIANA




*You can increase subscriber satisfaction and add new revenue to your existing facilities with this remarkable FM telephone carrier. Its superior quality has been proved by five years of field testing and it is now being extensively used by the largest telephone operating companies in America. Made expressly for Kellogg by the Panhandle Electrical Construction Company.*

# Another Quality product offered exclusively by Kellogg

# ST-SAVING FM TELEPHONE CARRIER

## Check these advantages:

- Provides more channels . . . 10 channels per circuit . . . 20 channels per pole lead . . . will not interfere with standard AM carriers on the same circuit.
- Saves you money . . . actually a low original investment which pays off in *low* maintenance costs.
- Satisfies your customers. High carrier gain and wide voice band make signals come through loud and clear.
- No synchronization necessary.
- Constant voice level regardless of variations in circuit attenuation.
- Carrier frequencies are crystal controlled insuring maximum stability of operation.
- Accommodates all types of signaling, including 10-party full selective divided or bridged ringing, code ringing, superimposed ringing . . . E & M dial signaling, too!
- Gives you trunk service, too . . . ideally suited for additional economical toll or EAS trunks.
- Offers you a complete line . . . outdoor cabinets, subscriber drop and transfer filters, emergency power supply, carrier frequency repeaters.
- Makes servicing easy . . . parts are interchangeable . . . transmitters, receivers, power supply, signal unit—everything all plug-in. Field maintenance is much simpler.
- Fits in with your present equipment . . . will not interfere with most multi-channel carrier systems... operates from 48 volt battery or commercial power line.
- Makes installation easy . . . averages less than a day for one man.

KELLOGG

KELLOGG A DIVISION OF I T & T

**KELLOGG SWITCHBOARD AND SUPPLY COMPANY**
*A Division of*
*International Telephone and Telegraph Corporation*
Sales Offices: 79 W. Monroe St., Chicago 3, Ill.
Phone DEarborn 2-0750

**KELLOGG Branch Warehouses and Offices:**

6000 W. 51st Street
Chicago 38, Illinois
REliance 5-445

410 N. Syndicate Avenue
St. Paul 4, Minneapolis
Nestor 588

23 Broderick Road
Burlingame, California
OXford 7-5780

4501 Truma Road
Kansas City 1, Missouri
Humboldt 7085

1515 Turtle Creek Blvd.
Dallas 2, Texas
Riverside 7-5191

1555 West Fourth Street
Mansfield, Ohio
Mansfied 7-2816

1594 Southland Circle, N.W.
Atlanta, Georgia
Sycamore 4-2441

504 County Bank and Trust Bldg.
Passaic, New Jersey
Prescott 9-3610

**Export Distributor:**

International Standard
Electric Corp.
50 Church Street
New York 7, New York

For technical details and application information, use this coupon to request the new Kellogg Panhandle Carrier Bulletin

Sales Manager
Electronic Products Dept.
Kellogg Switchboard & Supply Co.
6000 West 51st Street
Chicago 38, Illinois

Please send me the new Kellogg Panhandle Carrier Bulletin:

NAME_____

FIRM_____

ADDRESS_____

CITY_____ ZONE__ STATE_____

## BUYERS' GUIDE

**ADVERTISING.** Directories — *General Telephone Directory Co., 1800 Busse Highway, Des Plaines, Ill.*—[ADV. 1]

**BELTS — CLIMBERS — COMPLETE LINEMEN'S EQUIPMENT,** *W. M. Bashlin Co., Bashlin Bldg., Grove City 1, Pa.*—[ADV. 2]

**BOOTHS**—Acoustic Telephones — *Sherron Metallic Corp., 1202 Flushing Ave., Brooklyn 6, N. Y.*—[ADV. 3]

**BORING MACHINES, EARTH** — *Highway Trailer Co., Edgerton, Wis.*—[ADV. 4]

**CORDS, Switchboard (with or without plugs), Instrument (retractable and regular) and Operators** — *Commercial Cord & Supply Co., Inc., 26 Main St., Clifton Springs, N. Y.*—[ADV. 5]

**CORDS, Switchboard & Telephone** — *Runzel Cord & Wire Co., 4727-31 Montrose Ave., Chicago 41, Ill.*—[ADV. 6]

**INSULATORS, Porcelain** — *Porcelain Products, Inc., Box 300, Findlay, Ohio.*—[ADV. 7]

**PIPE PUSHERS** — *Giant Manufacturing Co., South 6th St., at 12th Ave., Council Bluffs, Iowa.*—[ADV. 8]

**POLES, Southern Yellow Pine** — *Taylor Colquitt Company, 217 E. Main St., Spartanburgh, S. C.*—[ADV. 9]

**POLES, Southern Yellow Pine** — *Texas Creosoting Co., Orange, Texas.*—[ADV. 10]

**PROTECTIVE EQUIPMENT** — *Reliable Electric Company, 3145 Carroll Avenue, Chicago 12, Ill.*—[ADV. 11]

**REBUILT TELEPHONES & SWITCHBOARDS** — *Telephone Repair & Supply Company, 1760 Lunt Avenue, Chicago 26, Ill.*—[ADV. 12]

**WIRE, Insulated — DATED DROP WIRE — Neoprene or Weatherproof** — *Alphaduct Wire & Cable Co., New Brunswick, N. J.*—[ADV. 13]

**WIRE, Insulated Drop and Bronze of Copperweld** — *Acorn Insulated Wire Co., Inc., 36 Freeman St. Pawtucket, R. I.*—[ADV. 14]

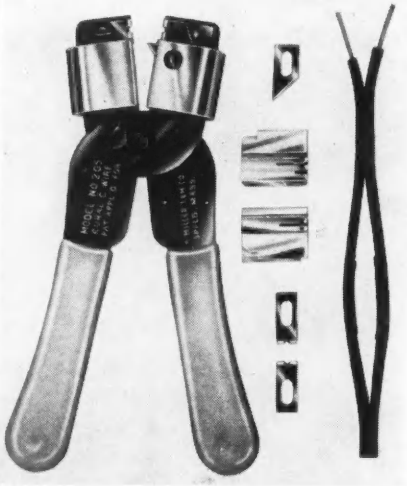
# NEW PRODUCTS

*(Continued from page 75)*

with the Cope Wing Bow Brace which assures a rigid barrier on three sides. The 4th side is protected by chains. The chains can also be used for locking the rail to standing equipment or to poles while not in use.

Manhole guard rails are available with spreader bars, flag holders, steel aprons on which inscriptions or company names can be placed and sign panels. — For complete data, *Check New Product* 135.

**WING BOW brace on this guard rail assures a rigid barrier on three sides.**



**K. MILLER Tool & Mfg. Co., Springfield 4, Mass., has released a catalog sheet describing the Model 205 Slitter and Stripper for Rural "C" Line Wire. The tool is 7″ long and weighs 8 ounces. According to the manufacturer the tool is self closing for safety. Heads are made for various wire sizes and the slitting and stripping knives are replaceable. — For complete data. *Check New Product 104.***

**"M-PACT-O" Pole Sounder penetrates the pole 6″ below the groundline.**

### Pole Sounder

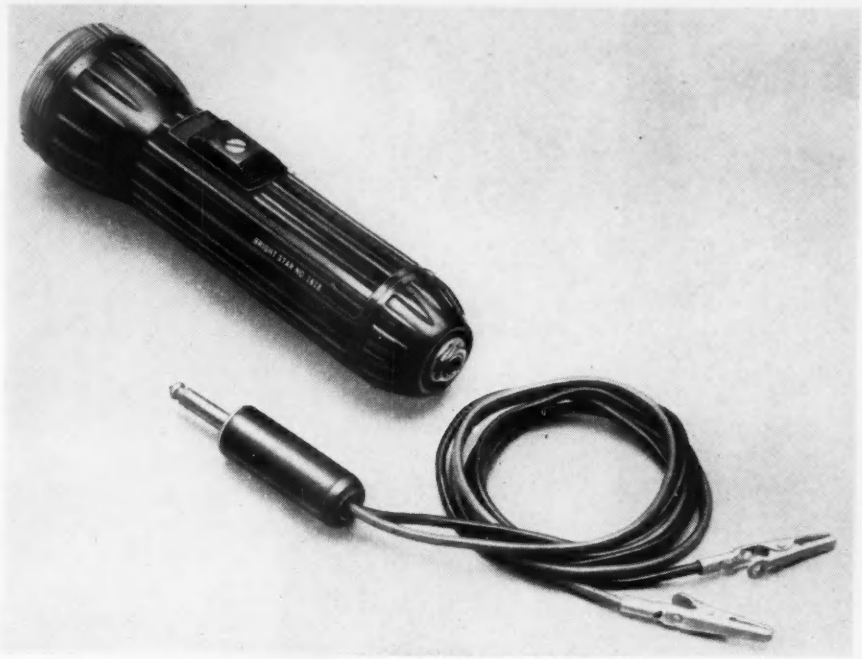
THE ENGINEERS TOOL CO., has released literature describing the "M-Pact-O" Pole Sounder, a tool for testing pole safety. According to the manufacturer, the tool penetrates the pole 6″ below the surface of the ground and the worker can determine instantly if the pole is rotted by the vibration felt in the Impaction handle. For Complete data, *Check New Product* 136.

### Spotlight Tester

A NEW combination Spotlight Electrical Circuit Continuity Tester, No. 1618CT, featuring an industrial flashlight with built-in Jack, is being marketed by Bright Star Industries, Inc.

The test leads use plug and clips for instant attachment. This tester, which works through a 3 volt battery supply has many uses, such as checking wiring, controls, circuits, fuses.

By using two testers in a series, it is possible to check wiring or controls and cables of a reasonable length (approximately 1000 ft. 18-gauge copper tinned wire to 5000 ft. 12 gauge copper tinned wire), at two different places, or where two men cannot see or hear each other. Both testers are turned on and one man clips the black lead of his tester to the con-



New combination spotlight tester.

duit for a good ground. The other man clips the red lead of his tester also to conduit, or outlet or switch box, for good ground wherever checking is to be done. When both men are on the same wire with their other lead, both testers will light up.

The Bright Star No. 1618CT Combination Spotlight Continuity Tester is not intended to be used as a voltage tester, or on live wiring.—For Complete Data, *Check New Product* 137.

## Electric Pumps

A MULTI-PURPOSE 35-pound submersible electric pump, which handles 3,300 gph at 5-foot head, is offered by Speed King Manufacturing Co., division of The Jaeger Machine Co.

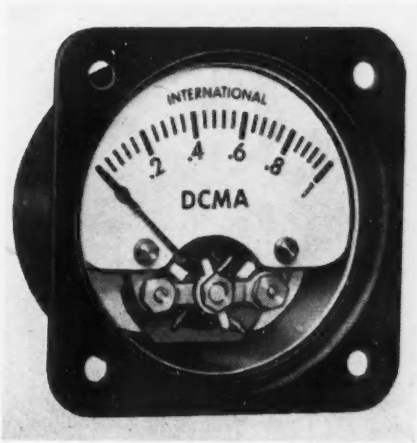
Compact (11 inches high, 11 inches wide) and inexpensive, this submersible pump features: (1) 1½ hp, single phase electric motor, hermetically sealed for trouble-free operation, completely submerged; pump is corrosion resistant, even in salt water; float switch is standard equipment for automatic operation; built-in thermal overload protector cuts off power if motor overheats for any reason and restarts automatically when motor cools.—For complete data, *Check New Product* 138.

New submersible electric pump.

## Miniature Meter

PRODUCTION of a 1½" Square Panel Meter, specifically designed for mounting on edge-lighted panels, is announced by International Instruments Inc.

Designated Model 155, this instrument is provided with an external shroud that permits mounting from the front of the panel with a minimum projection from the panel surface.




The meter incorporates a special, miniaturized D'Arsonval type movement, said to combine small size and light weight with high sensitivity. The manufacturer states that accuracy is held to ±3% of full scale deflection for d-c installations and ±5% for a-c. *Check New Product* 139.

**IF YOU DO not see a listing in these coumns of products or services you are interested in write "Buyers' Directory," 7720 Sheridan Road, Chicago 26, Ill.**

**READER'S SERVICE DEPT.**

**T - E - M**
**4 - 15 - 57**

■ PLEASE PRINT

NAME: .....

TITLE: .....

COMPANY: .....

ADDRESS: .....

**Telephone Engineer Publishing Corp.**
**7720 N. Sheridan Road**
**Chicago 26, Ill.**

■ **Please send me information on the following items: — (Check Items Wanted)**

**NEW PRODUCTS**

NP 128..... NP 129..... NP 130..... NP 131..... NP 132..... NP 133.....

NP 134..... NP 135..... NP 136..... NP 137..... NP 138..... NP 139.....

**SERVICES AND SUPPLIES**

ADV. 1..... ADV. 2..... ADV. 3..... ADV. 4..... ADV. 5.....

ADV. 6..... ADV. 7..... ADV. 8..... ADV. 9..... ADV. 10.....

interested in growth

# Look how toll revenue is growing!

Like the little guy in short pants who suddenly towers over you and wants to know if he can use the car tonight, toll revenue by Independents has grown so big so fast it's almost unbelievable.

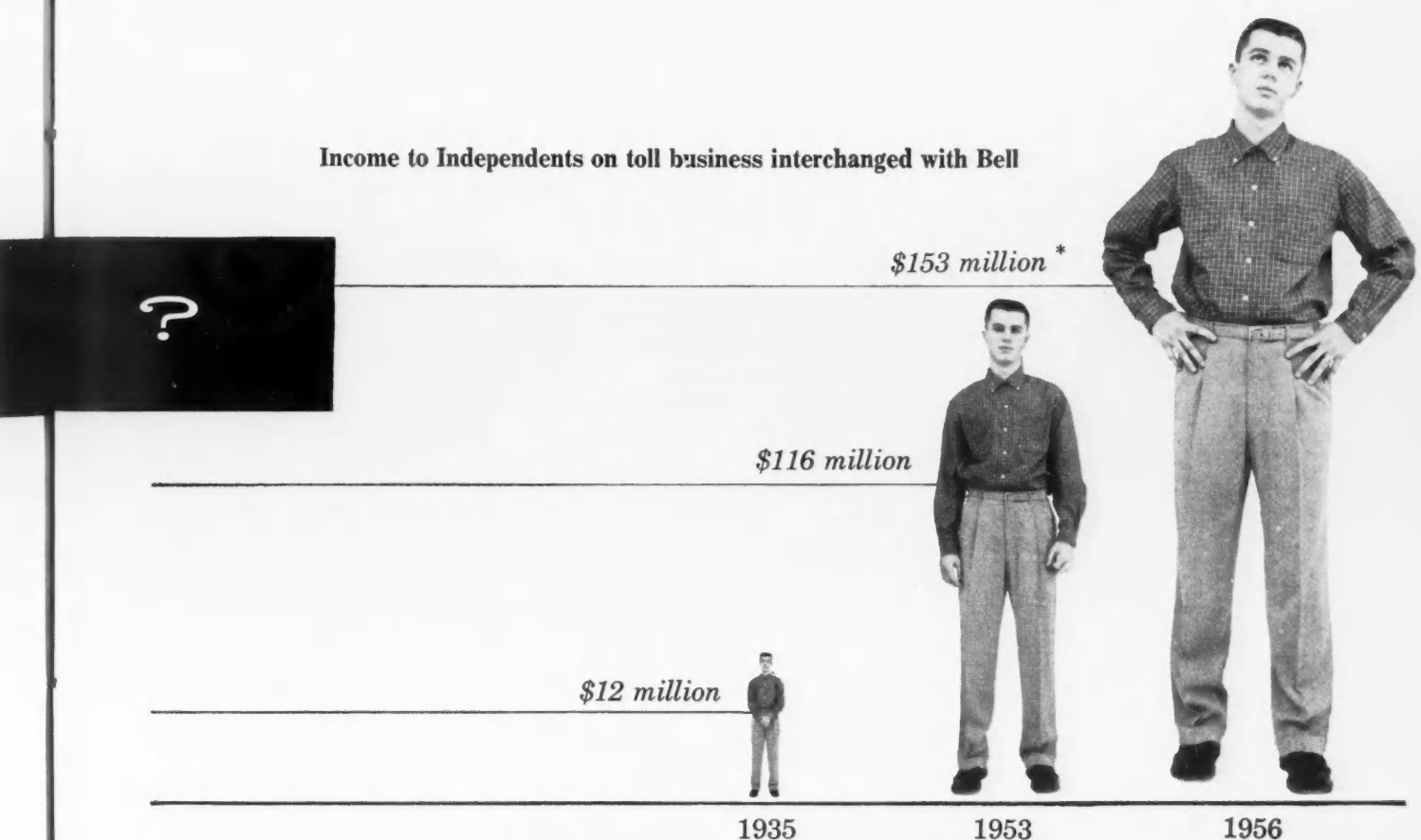
**QUESTION:** *Are you getting your full share of this mounting pile of toll dollars?*

If not, a suggestion . . . let Automatic Electric's carrier and radio engineers help you now in developing your toll circuits, TWX installations, telemetering and other special services that build toll revenue. Our specialists are ready and eager to go to work for you.

Just drop us a line today.

Automatic Electric Sales Corporation,
1033 West Van Buren Street,
Chicago 7, Illinois.

IN CANADA Automatic Electric Sales (Canada) Ltd.,
Toronto, Ontario.
*Offices in principal cities.*




*Based on "Report of Toll Compensation and Settlements Committee" 59th USITA Convention.

AUTOMATIC ELECTRIC

*Originators of the dial telephone • Pioneers in automatic control*

GENERAL SYSTEM INDEPENDENT

A TELEPHONE ENGINEER OPERATING MANUAL

# OUTDOOR BOOTHS (Part IV)

By JOHN S. REED

**PART IV of TE&M's Operating Manual on "Outdoor Booths" discusses — (1) Service entrance masts, and (2) Directory shelves and racks for outdoor booths. Part III appeared in the April 1 issue of "Telephone Engineer & Management."**

A simple and effective means of providing a satisfactory entrance for the outside wiring is to utilize the service entrance mast illustrated in *Figures* 36 *and* 37. This service mast places the telephone and power wires at the proper height for ground clearance which is particularly important in drive-in and car parking areas. Its use makes for a neat and durable installation, and permits reasonably long spans of drop wire and electric service wires to be placed.

The service mast is available in complete form for installing and attaching the outside light service wires and telephone drop. The installation method is illustrated in Figure 38. Should the booth be removed to another location, the mast is easily unbolted, lifted off the ground sleeve, and placed on another sleeve driven at the new location.

For the interior wiring, the first step is to lower the ceiling to obtain access to the roof space. The station protector (fuseless type), or line connector block, and the bell box are attached to the mounting plate in this space, using machine screws in the tapped holes. If an outside type protector of fused of fuseless type is to be used, the protector is fastened on the rear of the booth near the overhang with self-tapping screws, and bridle wire is run from the protector through the line entrance hole.

Separate channels are provided in the rear corner post back of the paystation mounting panel for running the electric light and telephone interior wiring. The telephone wiring is placed in the right hand channel and the electric wiring in the left hand channel. The light wires are connected in a receptacle at the top of the electric wiring channel, and may come through the channel from the bottom or the top, depending on whether these wires enter at the bottom of the booth through conduit set in the slab or at the top through an aerial span or conduit.

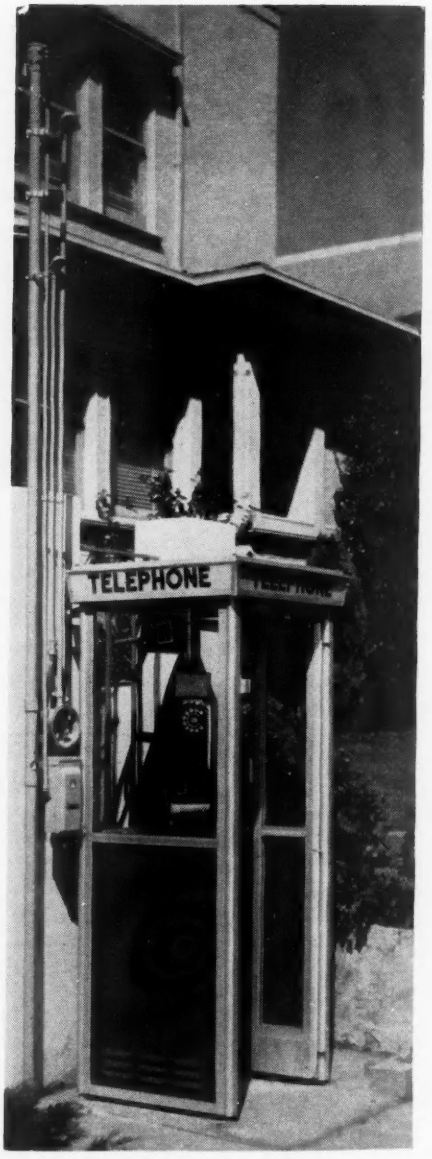



**FIG. 37:—Benner-Nawman Outdoor Telephone Booth with utility service entrance mast. Note half length panels on bottom part of booth with louvers for ventilation.**

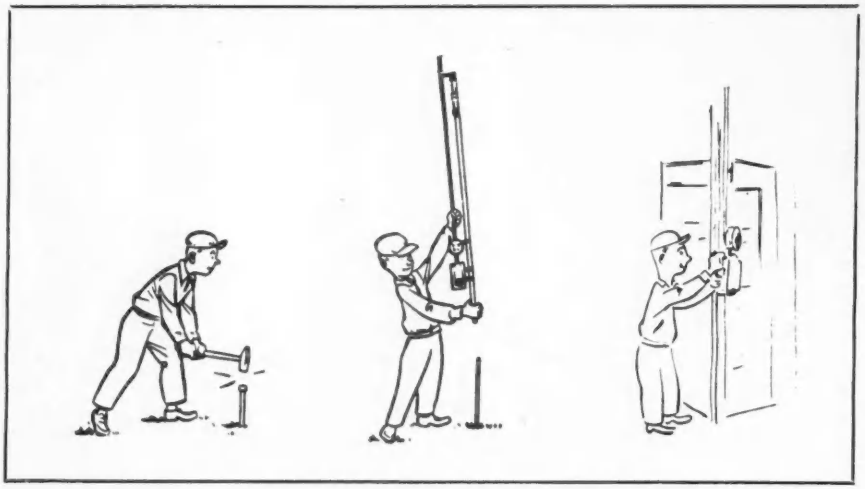


**FIG. 38:—Method of placing utility service entrance mast for outdoor telephone booth. Left — Driving ground sleeve. Center — Inserting assembled mast in ground sleeve. Right — Connecting service fittings to booth.**

In wiring the aluminum type booth, it is important to provide a ground for the booth frame, primarily as protection for the paystation

# NEW ANSONIA® Ankoseal® PARALLEL LINE WIRE

Two parallel Copperweld conductors insulated with the toughest black polyethylene compound for continued service under the worst conditions.

## Answering The Call For Quality!

Ansonia's enviable reputation for quality is emphasized once again in this new product. You simply will not find parallel line wire that gives better transmission qualities and takes a beating in the open the way Ankoseal Parallel Line Wire does!

Install your span lengths to absolute maximum with a feeling of complete security even to heavy loading zones. Transposing ANKOSEAL Line Wire is simplicity itself . . . simply twist the desired number of turns between poles. Highest quality transmission characteristics can be obtained and cross talk eliminated in rural areas.

Ansonia Ankoseal Two Conductor Parallel Line Wire is available in #12 or #14 AWG in 5,000 or 15,000 foot reels.

*Insist on* ANSONIA **Ankoseal** *quality*

ANSONIA® **Ankoseal®**

**Aerial and Direct Burial Cables**

**Self Supporting Cables**

**Inside Wiring Cables**

**B.U.G. Cables**

**Rural Distribution Wire**

**THE ANSONIA WIRE & CABLE COMPANY · ASHTON · R. I.**

*The Oldest Name In Plastic Telephone Cables In The Most Modern Plant Devoted Entirely To Producing Plastic Cables*

WITH MAINTENANCE-FREE **PBX**

BY **USI**

**Mighty few service calls to cut into profits** when you install rugged PBX equipment built by United States Instrument. It performs for subscribers year after year with close to zero maintenance.

**FEATURES YOU'LL LIKE:**

Relays with long-lasting twin contacts of precious metal.

Compact rotary and rectangular motion switches with twin bifurcated wipers.

Expands in steps from 2 trunks—10 stations to 15 trunks—100 stations.

Parts delivery overnight to most points.

**SUBSCRIBERS LIKE:**

Busy—lamp field for at-a-glance check of stations in use.

Automatic station transfer of trunk calls.

Key senders dial automatically on larger systems.

Incoming calls stored and put through automatically.

*Write today for our catalogs:*

**UNITED STATES INSTRUMENT CORPORATION**

P.O. Box 33-H. Charlottesville, Virginia

users. The grounding of the booth framework should conform to the National Electrical Code requirements. This is covered in the section of the Code relating to grounding for fixed equipment and is applied as follows:

(1) The booth framework should be metallically connected to the grounded cable armor or conduit.

(2) If the booth framework is not grounded in the foregoing manner, a grounding conductor should be run with the circuit conductors. This combination is usually a three-wire non-metallic sheathed cable with grounding conductor either bare or covered with green finished insulation.

(3) The grounding conductor may be run separate from the circuit conductors, as in the case of two-wire none-metallic sheathed cable, and bonded to the water pipe system. grounded cable armor, metal raceway, or a made ground.

As with other types of metal outdoor booths, a ground rod should be installed and connected to the aluminum booth frame by means of a screw terminal provided on one of the adjustable brackets at the bottom of the corner post supporting the paystation. This ground rod is not required when the power system neutral is grounded to a water pipe system in the telephone service area and the conduit from the booth to the entrance and fuse box is continous throughout. In this case the booth framework is connected to a low resistance ground through the conduit itself and no ground rod is needed.

The size of the ground rod depends on the type of the power system supplying the electric light service. A minimum ½-inch diameter, 8-foot Copperweld rod should be employed when the power system is of the multi-grounded neutral type and the neutral is not grounded to a water pipe. For other types of power systems, a standard station ground rod may be used. Regardless of the size of rod, No. 6 ground wire should be employed for the lead from the rod to the booth frame.

The protector ground post is connected to a screw terminal on the protector and bell box mounting panel with No. 14 insulated ground wire, whether an inside or outside type protector is installed.—*To Be Conitnued.*

# KEYSTONE Telephone Wire . . .

*when and where you need it!*

From many convenient locations, quality Keystone Wire is available for the needs of the telephone industry. Keystone offers a full range of Class A line wire in 50M, 85M and 135M tensile strengths. All line wires meet the specifications of A.S.T.M. and A.T.&T. and are approved by R.E.A. Your Keystone Distributor also offers a full line of galvanized bond, tie and construction wire in a full range of gauges. For quality wire—and prompt delivery—contact your nearest Keystone Telephone Wire Distributor or write direct for information.

**KEYSTONE STEEL & WIRE COMPANY**
**Peoria 7, Illinois**

**Crescent Electric Supply Company**
Dubuque, Iowa
Burlington, Iowa
Cedar Rapids, Iowa
Davenport, Iowa
Madison, Wisconsin
Mason City, Iowa
Ottumwa, Iowa
Peoria, Illinois
Quincy, Illinois
Rapid City, South Dakota
Sioux City, Iowa
Sioux Falls, South Dakota
Spencer, Iowa
Sterling, Illinois
Waterloo, Iowa

**Dakota Electric Supply Co.**
Fargo, North Dakota

**Joslyn Mfg. and Supply Co.**
Birmingham, Alabama
Chicago, Illinois
New Orleans, Louisiana
New York, N. Y.
N. Kansas City, Missouri
Dallas, Texas
Oklahoma City, Oklahoma
Omaha, Nebraska
St. Paul, Minnesota

**Kingsport Electric Co., Inc.**
Kingsport, Tennessee

**The Mine & Smelter Supply Co.**
Salt Lake City, Utah

**Line Material Company**
Milwaukee 1, Wisconsin

**Nelson Electric Supply Co.**
Dallas, Texas
**Lubbock, Texas**

**Jack Pruzan Co.**
Seattle, Washington

**Southern Electrical Corp.**
Chattanooga, Tennessee

**Suttle Equipment Company**
Lawrenceville, Illinois

**Wheeler Lumber Bridge & Supply Co.**
Norfolk, Nebraska

**British Ropes Canadian Fact., Ltd.**
Vancouver, B. C., Canada

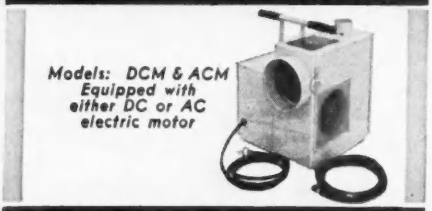
**Marshall-Wells Canadian Companies, Ltd.**
Winnipeg, Manitoba, Canada

KEYSTONE WIRE FOR THE TELEPHONE INDUSTRY

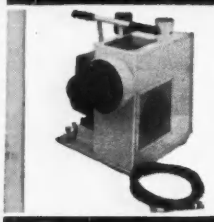
*. . . by the makers of famous Red Brand Fence*

*Ventilate and Heat Your Manholes*
**with MoPeCo Ventilating Heaters**

1. Used throughout the telephone industry.
2. Provides a constant supply of forced fresh air in manhole.
3. Prevents accidents caused by latent gas or oxygen deficiency.




4. Portable — one man can carry unit.
5. Blows fresh air in summer. Blows heated fresh air in winter.
6. Only one type of fuel needed (propane).




7. Safer and healthier working conditions in the manhole.
8. Dries out manholes—softens old paraffin splices.
9. Designed for year 'round underground operations.
10. Model PE-G offers all features of Model PE plus attached generator for light in the manhole.

The low cost, versatile MoPeCo Ventilating Heater offers a new concept in underground heat and ventilation. New safety and comfort for underground operations of telephone, telegraph, electric, water and gas utilities insures faster production.

MoPeCo ventilating heaters may be equipped with Briggs Stratton gasoline engines converted to propane carburetion, direct current electric motors, or alternating current motors, using propane for heat.

*Write for free brochure and full information to:*

**Morrison - Pelsue Co.**
Post Office Box 8328—UP
**Denver, Colorado**

# Construction Ideas

*(Continued from page 46)*

out road dust which would get into the spray mixture to cause clogging.

### *Storing Block and Tackle In Metal Cans on Trucks*

IT IS NOT an easy matter to store block and tackle on construction trucks as they tend to become entangled with other equipment. Also, storing the tackle in the open on trucks causes them to accumulate grease, dirt, and dust. One company has conceived the idea of using a ten-gallon metal can with cover for storing the rope and tackle blocks. The rope can be coiled into the can after pulling the blocks together. This size of metal can will hold 275 feet of ½-inch rope with two and three sheave blocks.

### *Pole "Dinkey" Makes A Come-Back*

MANY YEARS ago, when poles were set by "piking" them up, a small two-wheeled dolly termed a pole "dinkey" was employed to assist in boosting up large and heavy poles. With the advent of pole derrick trucks, the dinkey fell into disuse along with the piking method.

Within recent years, however, the trend to real estate developments without free ways or alleys between properties, has created a service problem for telephone company crews working on pole lines along the property boundaries, particularly when poles must be brought onto the properties for setting or replacing other poles. The workmen are hindered by fences and shrubbery plantings and are often compelled to return to the street to enter the adjoining property. Moving heavy equipment onto the properties for line work entails some damage to lawns, gardens, and shrubbery, even when great care is exercised in these locations.

**If you want complete information on the tools and equipment described by this article write — Managing Editor, TE&M, 7720 N. Sheridan Rd., Chicago 26, Ill.**

One old time construction foreman, recalling the pole dinkey of years past, conceived the idea of building a similar unit for transporting poles across lawns and gardens with minimum damage to grass and plantings.

*Figure* 19 shows the modern form of dinkey which was made from an old pole trailer with a double saddle for carrying a single pole. It is used as shown in *Figure* 20. Crewmen like

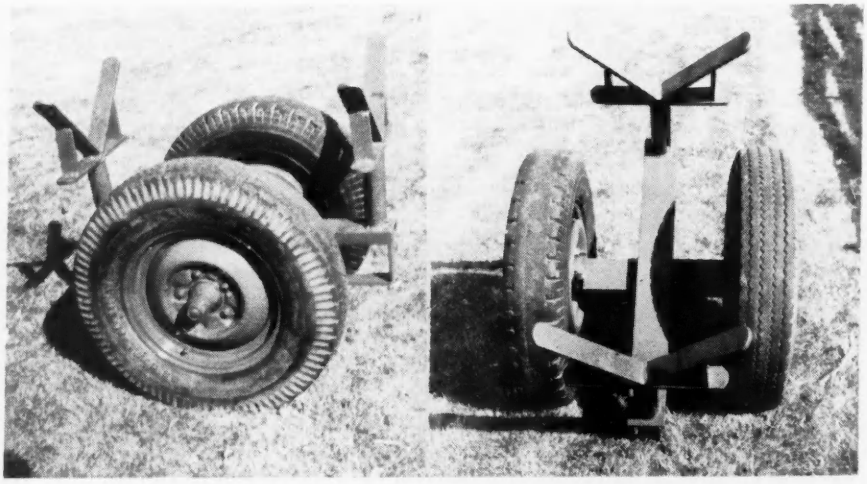


**FIG. 19:—Pole "dinkey" for transporting pole in restricted spaces. Axle and saddle cross member are made from 5″ channel iron welded together. Saddles are made from heavy 3″ strap iron pieces welded on top of 3″ pipes brazed to ends of cross member.**

the little cart as a great labor saver, and property owners do not seem to object to its use on their premises.

### *Trench Digging Equipment For Buried Cable Jobs*

FOR THE telephone industry, the trench digger shown in operation in *Figure* 21 has an important application, that of digging narrow trenches for laying buried telephone cable. The use of buried cable is increasing.

This machine is designed to dig trenches 6 inches wide and 3 to 6 feet deep at a claimed speed of up to 800 feet per hour depending on soil conditions. The narrow width of the ditch reduces the amount of back

***Please turn to page 90***

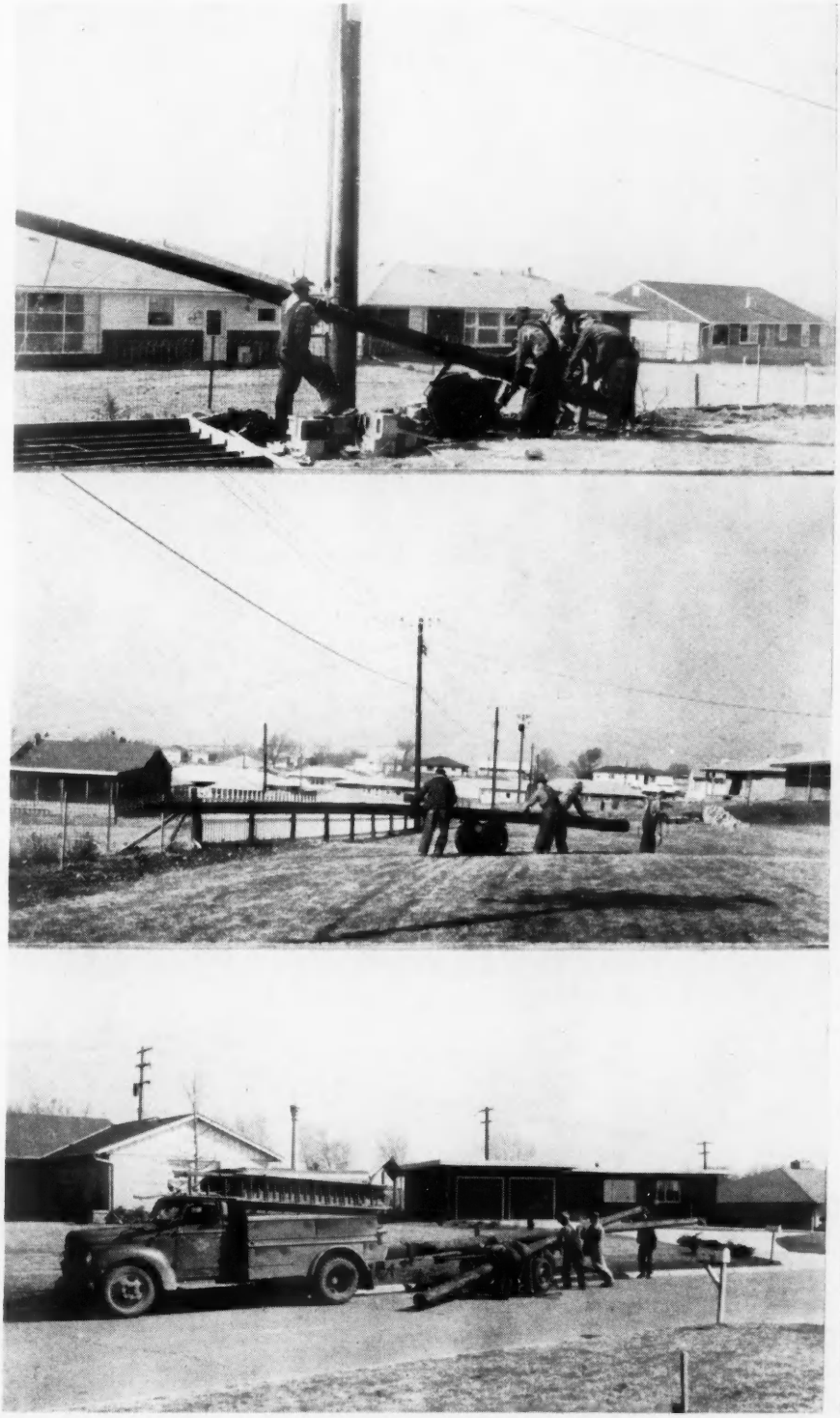


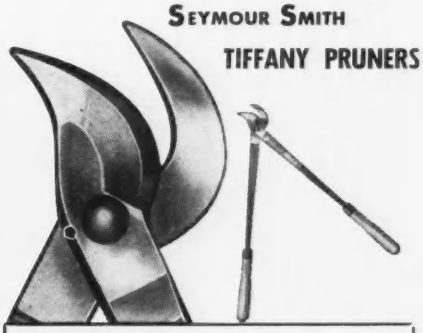
**FIG. 20:—Pole dinkey in use to remove a 35 foot pole replaced by a taller pole (for power company's transformer bank). Top — lowering the pole with block and tackle onto pole dinkey. Center — moving pole on dinkey over private property to driveway. Bottom — Dinkey has been moved onto street and pole is being transferred to regular pole trailer.**

Illustrated above is No. 11 Tree Pruner with center cut action by tempered steel blade that easily handles 1" branches. Head is reinforced malleable iron. Spruce poles with telescoping aluminum joints. For heavier work No. 12-18, capacity 1½". Also Pole Saws.

*for clearing brush...*

SEYMOUR SMITH

TIFFANY PRUNERS



Hand forged throughout. Fast and easy double cut action with thin blades shaped to "draw in." Improved bolt and nut joint, through handle and riveted grip fastening.

FAST-CUTTING SAWS

Blades of Swedish charcoal steel. Large, deep teeth with heavy set to prevent binding. Hand and Pole models for all work up to chain sawing.

Quality Tools
SEYMOUR SMITH
Since 1850

Send for FREE literature
Seymour Smith & Son, Inc.
4404 Main St.
Oakville, Conn.

PORTRAIT OF AN INDUSTRY

# The File Clerk

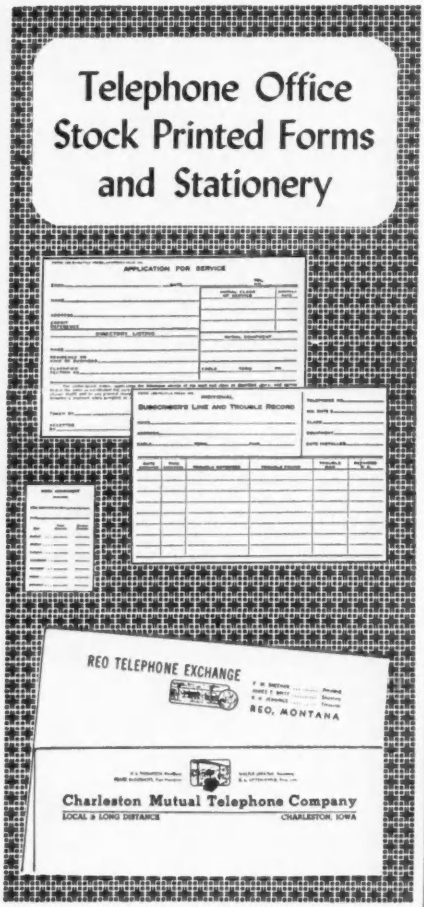
At her fingertips are records, orders, work cards, receipts that are indispensable to our job. Keeping order in this world of paper is her contribution to helping supply telephone equipment to Bell telephone companies.

Like the lineman and the operator, the file clerk lends her ability to help achieve the common goal of the telephone industry . . . providing better telephone service for America.

Western Electric

MANUFACTURING AND SUPPLY UNIT OF THE BELL SYSTEM

Telephone Office Stock Printed Forms and Stationery




Printing from Suttle to handle all phases of Your Accounting —

Ledger Sheets
Toll Accounting Forms
Cash Reports

Time and Payroll Forms
Labor Reports
Material Records

Line and Station Records
Work Orders
Correspondence

Billing Supplies
Collection Literature

WRITE TO SUTTLE ABOUT YOUR REQUIREMENTS

See Your SUTTLE Catalog

Serving Independent Telephone Men Since 1910

Suttle EQUIPMENT CO.

LAWRENCEVILLE ILLINOIS


filling required on completion of the laying job. A cross shaft with left hand helical thread on one end and right hand helical thread on the other end moves the dirt away from the ditch and deposits it on both sides for later back filling with scraper equipment.

The trenching equipment is mounted in a "Jeep" truck body which provides maneuverability in small space and good roadability.

*Figure* 22 shows a close up of the gear drive and control equipment.

The engine power is transmitted through the gear drive connected in the truck center power takeoff, supplying power to the digging ladder. This compact drive, running in oil, replaces a multitude of exposed sprockets and chains and assures longer life for the machine. An exclusive hydraulic drive provides a forward speed infinitely variable from zero to fully engaged. The hydraulic drive oil cushions the shocks of changing soil conditions, making for smooth propulsion under all conditions.

The boom is raised and lowered hydraulically to any position in the 190 degree arc of travel. Weight of the trencher is approximately 1750 pounds.

Four levers control the gear drive in operation. The truck clutch, gear engagement, raising and lowering of the boom, and trenching speed are controlled from one place by one man.

FIG. 21:—Narrow trench digger in operation.

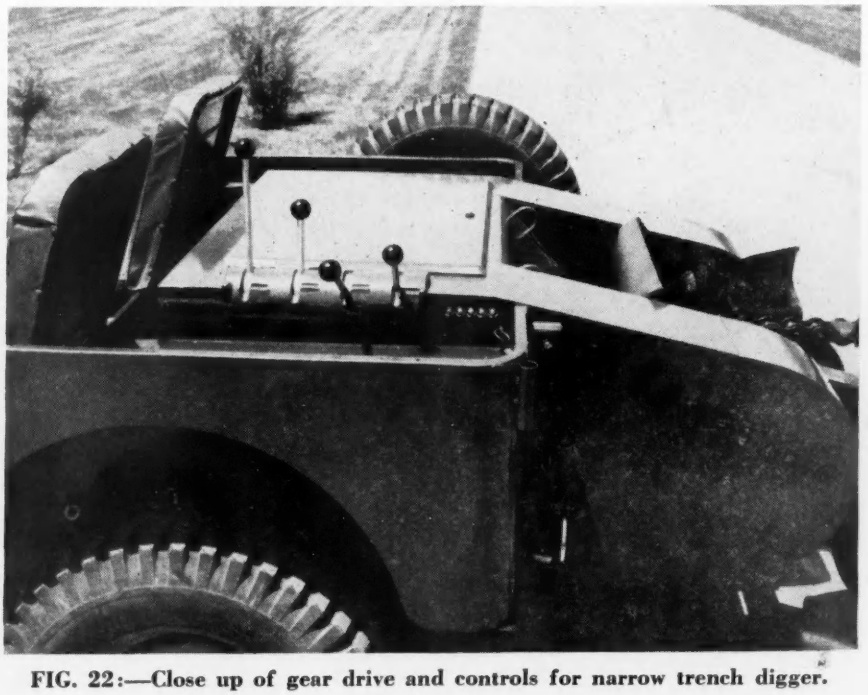
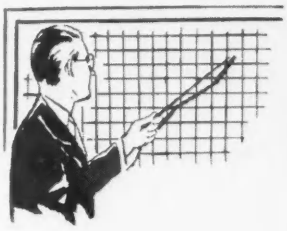


FIG. 22:—Close up of gear drive and controls for narrow trench digger.



# telephone ASSOCIATION activities

**Minnesota Independents Meet**

## 815 Attend 48th Annual Convention; H. James Boyd, Elected President

AN ALEXANDRIA man, H. James Boyd, was elected as new president of Minnesota Telephone Association, Inc. during the organization's 48th annual convention at the Radisson Hotel, Minneapolis.

Action came at close of the convention which attracted 815 delegates over its three days of activities to rank as the largest telephone industry conclave in Minnesota history.

Mr. Boyd is manager of the Alexandria Telephone Co., and has been active in that community's civic affairs. In 1955 he was named Alexandria's "young man of the year." He succeeds Eldon Eckles of Blue Earth, who headed the association the past two years.

Carl Ostby, manager of Garden Valley Telephone Co., Erskine, was named vice-president, Keith W. Vogt of St. Paul was renamed secretary-treasurer.

Five telephone company officials were named to three-year terms on the board of directors: Charles Cashel, Worthington; Herbert Lien, Blackduck; Paul Glaeser, Springfield; Elnathan Gates, Minneapolis; and C. F. Marvin, Zumbroata. Kenneth Johnson of Bricelyn was named to fill a one-year vacancy on the board.

### *Demand Continues*

ELDON ECKLES, retiring president of Minnesota Telephone Association, Inc., gave the keynote address at the opening session.

"Experts estimate that there will be an increase of 631,000 households in America during 1957," Mr. Eckles told delegates. "That means the building of many new houses and many new housing developments — as well as the furnishing of modern telephone service by the telephone industry to go hand in hand with this construction. This demand for new service — plus the continuing job of upgrading service for existing subscribers — presents a big challenge for all telephone companies," he added.

Mr. Eckles warned telephone company managers that a "solid ratio of debt to equity" is very desirable.

"Any company or individual who hopes to do business entirely on borrowed capital is in danger if and when our economy becomes less prosperous than it now is," he emphasized.

The speaker concluded by pointing out that there will always be a place in modern telephony for small family-owned companies "who can operate their smaller areas cheaper and better than large corporations; and who can give first-class telephone service if they keep up with modern times."

**Plan to Attend USITA's 60th Anniversary Convention, at Conrad Hilton Hotel, Chicago, October 14, 15, 16.**

**KEITH VOGT, (left) St. Paul, secretary-treasurer, Minnesota Telephone Association, Inc.; discusses convention with (l to r): — CHARLES CASHEL, Worthington Tel. Co.; Miss LUCILLE KOEPP, Minneapolis Railroad & Warehouse Commission; HARVEY KNUTSON, St. Paul, and ROBERT JOHNSON, St. Paul.**

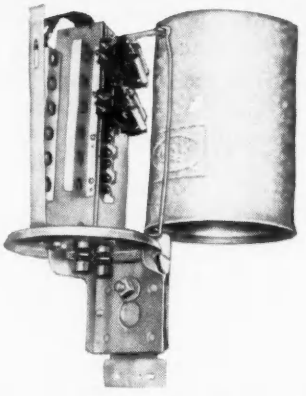
### *Service In Rural Areas*

DAVID A. HAMIL, Administrator, Rural Electrification Administration, told the convention that Minnesota is one of the states in which the percentage of farms with telephone service stands above the national average.

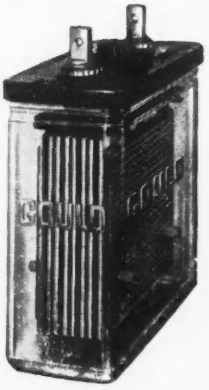
Expressing his conviction that "rural people should have the very best telephone and electric service

# There's a Kellogg Warehouse near you

**Type 775-P Aerial and Duct Cable** gives maximum protection against moisture and weather. Conductors are individually insulated with polyethylene and paired with systematically varying lays to eliminate cross talk. Cable is shielded with aluminum tape and protected by a tough, plasticized polyvinyl chloride jacket. Available in 24, 22 and 19 gauge, 11 through 404 pair. ANSONIA WIRE & CABLE COMPANY.

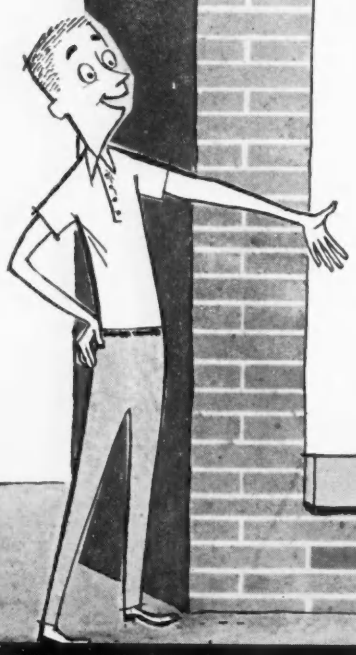


**For Use with Plastic Cable**—The S-20V protected or unprotected terminal has 2 cable entrances arranged to take any size of compression coupling from 6 to 51 pair. Pipe Plug inserted when one cable entrance is required. A product of COOK ELECTRIC COMPANY.




**Outstanding Battery Performance** is yours when you choose Gould Plante Batteries. Thick, grooved, pure lead positive plates give many years of trouble-free service! Made by GOULD-NATIONAL BATTERIES, INC., the finest money can buy.

**Save Three Ways** . . . on materials, man-hours, and maintenance with INDIANA STEEL & WIRE CO.'s Crapo HTL-85 and HTL-135 Line Wire. Galvanized by the famous Crapo Galvanizing Process, protected with heavy ductile coating of zinc.

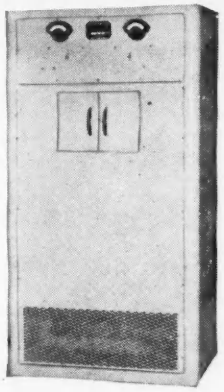


Eight Kellogg warehouses and over 100 Kellogg distribution points from coast to coast assure you savings in shipping costs and fast delivery. You get the benefit of Kellogg's selection of top quality line supplies, too.

# KELLOGG

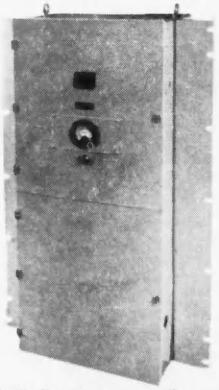
A DIVISION OF I T & T

**KELLOGG SWITCHBOARD AND SUPPLY COMPANY**
*A Division of International Telephone and Telegraph Corporation*
**Sales Offices: 79 W. Monroe St., Chicago 3, Ill.**

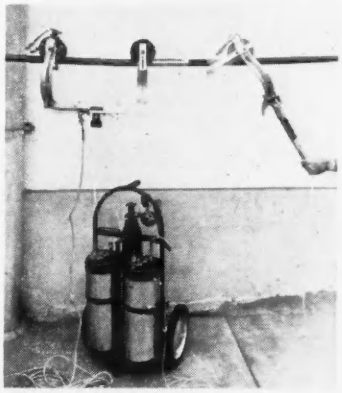


**Self-Contained Unit**—The 3-phase Flotrol Automatic Constant Voltage Battery Charger has no moving parts—all components in one cabinet. No separate units to install. Designed for plants requiring 25 to 400 amps charging capacity.
LORAIN PRODUCTS CORPORATION.

**Preformed C Rural Dead-Ends** for use on 2#14 and 2#12 Copperweld and 2—.083 Steel C Rural conductors. Made of stainless steel with neoprene coating. No slipping or damage to the conductor insulation. Multiple wire loop gives extra strength. Easy to apply by hand. Simply insert one leg through the eye-bolt and then wrap on the legs. PREFORMED LINE PRODUCTS COMPANY.



**New 48-Volt Battery Charger Line.** Completely redesigned Raytheon Recti-Chargers (R) feature no load to full load regulation of ±1%, no tubes, automatic compensation for rectifier aging, no audible hum. Most compact units on the market—single and three phase, output from 30 to 400 amperes. RAYTHEON MANUFACTURING COMPANY.



**Cable Leak Detector**—Two models are illustrated. Model at left is for high cables. Nozzles spray cable, air pressure from tanks causes air bubbles clearly seen from ground. S & G MANUFACTURING CORPORATION.

**KELLOGG Sales Office**
**79 W. Monroe St.**
**Chicago 3, Ill.**
**DEarborn 2-0750**

**KELLOGG Branch Warehouses and Offices:**

6000 W. 51st Street
Chicago 38, Illinois
REliance 5-5445

4501 Truman Road
Kansas City 1, Missouri
HUmboldt 7085

23 Broderick Road
Burlingame, California
OXford 7-5788

410 N. Syndicate Ave.
St. Paul 4, Minnesota
Nestor 5878

1515 Turtle Creek Blvd.
Dallas 2, Texas
RIverside 7-5191

1555 West Fourth Street
Mansfield, Ohio
Mansfield 7-2816

1594 Southland Circle N.W.
Atlanta, Georgia
SYcamore 4-2441

504 County Bank and Trust Bldg.
Passiac, New Jersey
Prescott 9-3619

**DIRECTORS OF Minnesota Tel. Assoc., Inc., hold annual meeting during recent convention. Left to right: — P. M. FERGUSON, JR., Mankato; C. F. MARVIN, Zumbrota; ELNATHAN GATES, Minneapolis; HAROLD BOLLINGER, Waconia; H. JAMES BOYD, Alexandria, new M-T-A president; J. F. EITZEN, Mountain Lake; JOHN HOLLAND, New Ulm; ELDON ECKLES, Blue Earth, outgoing M-T-A president; KEITH VOGT, St. Paul, secretary-treasurer; KENNETH JOHNSON, Bricelyn; HERBERT LIEN, Blackduck; WALDON PIEHN, Harmony; VIES MARTINSEN, Grand Meadow; CARL OSTBY, Erskine; CHARLES CASHEL, Worthington, Not in picture — Paul Glaeser, Springfield.**

that can be provided if they want it," Mr. Hamil emphasized that "when they want it they are going to get it, either from Independents, or from Bell, or they will organize their own telephone associations."

"What REA is trying to do in the telephone field," he said, "is easy to sum up in a sentence: REA has been given by the Congress a responsibility to see that the farmers of this country get adequate telephone service. The way we are to carry out the mandate is easy to sum up: REA makes long-term, low-interest loans to telephone companies and telephone non-profit organizations that will extend and improve service in rural areas."

Pointing out that farmers have shown they are willing to pay more for better service, Mr. Hamil stated, "I think we have to accept the expectation that earnings from rural lines will continue to be thin.

"In the face of rising costs of construction and operations on the one hand and a certain consumer reluctance to go along with increases in the cost of services on the other," he said, "there is an obvious squeeze in the telephone industry which is exerting great pressure on the small systems. The easier terms of REA financing has made telephone service possible in some areas that could not otherwise have received telephone service. Even so, the hard realities of telephone economics makes loans unfeasible to many small companies and mutual organizations in areas where improved and expanded service is sorely needed.

"One of the troublesome problems on the desks of REA loan appraisers, accountants, and engineers is that the systems of some applicants are just too small to yield a livelihood to the owners. In such cases we are saying quite frankly that consolidation of the very small companies is the only hope we see for improved service.

"There are other difficulties. There is a shortage of telephone engineers. We have about 20 vacancies in our own engineering staff at REA. Even more serious is the difficulty that borrowers find in hiring or contracting engineers to do their system planning . . ."

"Among other obstacles to easy expansion by small and medium-sized companies are the rising costs of construction and of materials and equipment. Along with this are continued delays in delivery of central office equipment."

Mr. Hamil explained that in a search for answers to these many questions REA is continuing to work with borrowers — now numbering more than 500, and with all segments of the industry.

"An Advisory Committee from the telephone industry," he said, "meets with me from time to time so that we may examine the REA program and its needs. There is at the present time a special subcommittee of system managers who are also engineers. This group is preparing recommendations for the relief of the condition caused by the shortage of telephone engineers.

"We would like to have the best

**MEMBERS OF This Minnesota convention group are (l to r): — ELDON ECKLES, retiring M-T-A president; DONALD POWER, USITA president; KEITH VOGT, M-T-A secretary-treasurer, H. JAMES BOYD, incoming president of M-T-A.**

thinking of *all* of you in working toward good service at reasonable rates for farmers and other rural subscribers. Letters that you write to me, conversations that you have with members of the REA staff, questions which you raise at meetings like this one, and opinions published in the telephone trade press all help us in determining how REA loans can assist you. . . ."

**MINNESOTA CONVENTIONEERS (l to r): — ELNATHAN GATES, Minnesota Tel. Co., Minneapolis, MARK CLAY, Hutchinson Tel. Co.; P. M. FERGUSON, JR., Mankato Citizens Tel. Co. and WAYNE CALDWELL, Home Telephone Co., Clarkfield.**

### *Progress Report*

THE "Horse and Buggy" telephone service in the outlying areas of Minnesota is fast becoming a thing of the past and the day when virtually every telephone in the state will be dial-operated is only a few short years away.

Keith W. Vogt, secretary-treasurer of Minnesota Telephone Association, Inc., painted this optimistic picture for the future in a talk presented at the second session of the convention.

"Granted fair and equitable treatment on taxes, a continuing supply of investment capital with which to finance system expansion and modernization, and adequate earnings for the companies, our great telephone industry will continue on its goal towards modern telephone service for all subscribers — city and rural alike," Mr. Vogt said.

He reported that in the past two years 85 communities in Minnesota were converted to dial operation, and that there will be no let-up in conversion plans during 1957. At present 52 percent of the 231,912 Independent telephones in Minnesota and 90 percent of Northwestern Bell Telephone Company's 911,641 telephones are dial-operated.

To finance improvement work slated for Minnesota's telephone network, it is conservatively estimated that $10,000,000 in capital funds will be needed in the next five years. This will come largely from two main sources — private financing by banks, insurance companies and other lending institutions; and for marginal rural areas — from government loans through the Rural Electrification Administration (REA).

### *Civil Defense*

THE NATION'S civil defense telephone warning system now involves a total of 70 interlinked circuits and extends over 40,622 miles of lines, Albert C. Tilley of Denver, Federal Civil Defense Administrator for Region VI, reported to the annual convention.

"The annual cost of this vital communications link is $1,429,615, and service is provided by American Telephone and Telegraph Co., its affiliates and 27 Independent telephone companies," he said.

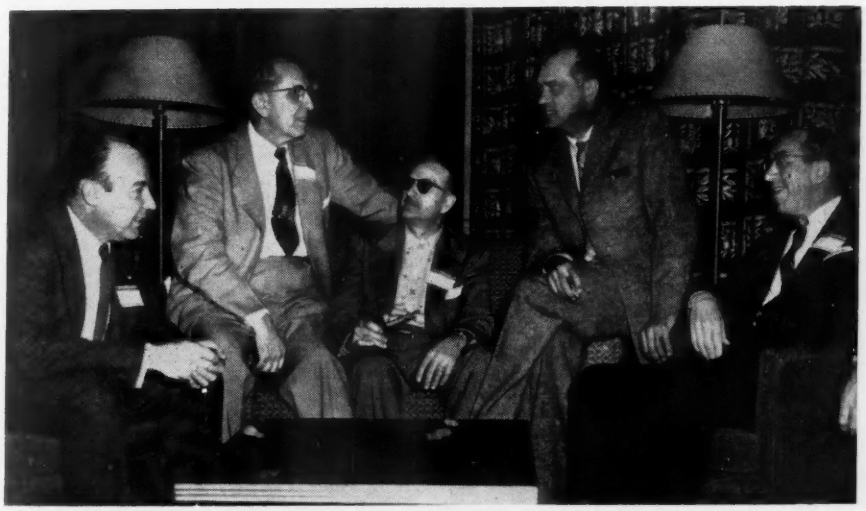
Mr. Tilley pointed out that all civil defense services are dependent upon communications and that "failure of communications in time of emergency could cause a complete breakdown of the whole civil defense preparation.

"If this country is attacked," he said, "there will be immediate necessity for communications — telephonic, telegraphic, and radio — not only between the several levels of government. The volume of traffic involved will be almost beyond imagination . . ."

The Denver man reported that the federal government is presently financing a project in Minnesota to prepare, under direction of state and local civil defense authorities, a preliminary operational survival plan. This planning staff has determined, he said, that the dropping of a 20-million ton bomb on Minneapolis-St. Paul would result — unless there is adequate warning time to permit evacuation — in killing or injuring the entire population of 1,200,000 people within a radius of 20 miles.

"If there were enough warning time — say eight to 10 hours — the entire population normally living within the expected damage areas could have been evacuated to places of relative safety," he said.

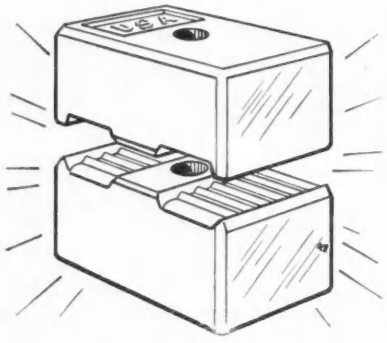
Sharing the speaking program with



**FORMER MINNESOTA telephone official, C. H. JOY, Grinnell, Ia., greets (l to r): — J. F. EITZEN, North Star Tel. Co., Mountain Lake; CARL RUPE, Dunnell Tel. Co.; WALDON PIEHN, Harmony Rural Tel. Co.; HAROLD BOLLINGER, Waconia, Pioneer Tel. System.**

**KEEP CUSTOMERS HAPPY**

**PROVIDE CONTINUOUS SERVICE WITH PORCELAIN PRODUCTS TELEPHONE INSULATORS**



Made of highest quality dry-process electrical porcelain . . . Porcelain Products telephone insulators assure long, continuous service . . customer satisfaction. Porcelain Products, Inc. has served the telephone industry for 62 years, offering a complete line of insulators that meet AT & T and REA specifications . . . simplifying installation . . . reducing maintenance. Write for complete information, today!

**PORCELAIN PRODUCTS, INC.**
**Findlay, Ohio**

**PRAIRIE**
**Outdoor Telephone Booths**

**Build Profitable Revenue in new locations with low installed cost.**

**PRAIRIE IMPLEMENT CO.**
**Lincoln, Nebraska**


Mr. Tilley was Ray Rosenkoetter, sales engineer in the electronics products department of Kellogg Switchboard and Supply Co., Chicago.

A development to aid rural telephone service — known as FM carrier systems — was described by Mr. Rosenkoetter. Using radio frequency waves over existing telephone circuits, the system permits as many as 10 conversations to be carried on simultaneously, the speaker said, and eliminates the need for additional circuits.

Installations of this type are in service at Bemidji, Hector, Wheaton, Brainerd, Osseo, Hastings and Aitkin, he reported.

### *"Dialing The Nation"*

THE YEAR 1957 will usher into Minnesota the first use of direct distance dialing, whereby the telephone user will initiate and complete his own long distance call without an operator's assistance, John L. Hinrichsen, operating superintendent of Pioneer Telephone System, Waconia, revealed during his address.

"The first offering of direct distance dialing in Minnesota during 1957 will follow limited lines," he said. "Some Independent and Northwestern Bell Telephone Company exchanges in and around the Twin City metropolitan area will begin to dial station to station late this summer to specified points both within the state and beyond to other states. The list of areas to be dialed will gradually be expanded as well as the number of Minnesota exchanges connected to the state network."

Characterizing the plan as "almost fantastic" and a tribute to American industry, Mr. Hinrichsen said its success requires split-second coordination of the equipment of 4,800 separate operating telephone companies in the United States and Canada.

"Over 12 separate equipment manufacturers in the two countries must coordinate the design and production of masses of electrical and electronic equipment, and this equipment must then be shipped into place in the national telephone network in such a way that service continues without pause," he said.

Dr. Gordon Volkenvant, Minneapolis consulting engineer, also appeared on the program, discussing the subject "The Electron and the Atom in Your Future."

Mr. Volkenvant demonstrated "the shape of things to come" with elec-

MRS. NEVEILLE H. COLSON, proudly displays the engraved Stromberg-Carlson telephone which was presented to her recently on the day when she served as Governor of Texas. As president pro tempore of the State Senate, Mrs. Colson was the top-ranking official in Texas when the Governor and Lieutenant Governor were both out of the state. The telephone was presented by the Texas Telephone Association, represented by (from left) *D. G. Gardner, Jr.*, president; *Claud H. Gilmer*, a director and former Speaker of the House, and *J. B. Haley*, executive secretary of the Association.

LOOK TO THE LEADER...

for
• RELIABILITY
• SERVICE
• NATIONALLY KNOWN TELEPHONE SUPPLIES

Prompt delivery of your order as specified is assured by Lindsay's fast, efficient, personalized service. Lindsay specializes in telephone supplies *only* . . . warehousing a complete line of the finest nationally known brands . . . your guarantee of the best as you want it . . . when you want it.

LOOK TO LINDSAY

THE LINDSAY TELEPHONE SUPPLY CO., *Est. 1939*
10409 Meech Ave., Cleveland 5, Ohio • Telephone Diamond 1-9212

tronic equipment such as proximity alarms, electric eyes, electronic fire detectors, pocket radios, radio-controlled devices, germ killing rays and electronic dust and germ collectors.

***"The Future"***

AMERICA'S telephone industry ranks today as the "nation's backbone of personal communication" and is a vast network handling 70 billion local and long distance conversations yearly through the air, underground, overseas and underseas. Donald C. Power, president of United States Independent Telephone Association and head of General Telephone Corp., New York City, said as he depicted industry growth for delegates attending the convention.

"Sixty years ago — which marked the start of organized Independent telephony in America —" he said, "the telephone business was built around landwires and pole lines, linking telephone instruments in the subscriber's home or place of business with a central switchboard and a few toll circuits. But today it is a vast, complicated business. It is an appliance business. It is radio business. It is electronic business. And it is scientific and research business."

Pointing out that picture windows and open-faced office and apartment buildings are symbols of better communication and general understanding in America, Power said: "It was the telephone which played a large part in bringing people out of the shadows and closed rooms of bygone years . . ."

Declaring that "the day has gone when we can feel that one telephone in every home is an adequate goal," Mr. Power said that many new services have been provided to meet subscriber demand and that the industry must continue to explore and fulfill "those steadily developing needs."

"The new telephone appliances enable us to help our subscribers in many ways, such as color decoration of their homes, in asissting the hard of hearing, and others who have special need for mobile service signaling devices," he stated. "Then there is that vast new field of special business equipment, such as telephone answering and recording devices, and optional loud-speaking telephones for conferences or other purposes."

On the subject of revenue requirements, Mr. Power pointed out that the total amount of rate increases for telephone companies since World War II "are still in the order of about 50 percent or less than half the increases in general cost of living items."

"We have no apologies to make," he said. "It is manifestly impossible for telephone companies to go on expanding service and meeting higher operating expenses without some measure of rate relief."

Ray W. Smith of Chicago, president and editor of Telephone Engineer Publishing Corp., and D. John Villas, executive assistant for Northwestern Bell Telephone Company, Minneapolis, also addressed the final convention session.

Mr. Smith discussed the importance of having regulatory commissions establish a fair rate base for telephone companies when considering applications for increased subscriber service charges.

"The situation is that some commissions apparently believe that six percent or thereabouts, on whatever the commission determines to be a

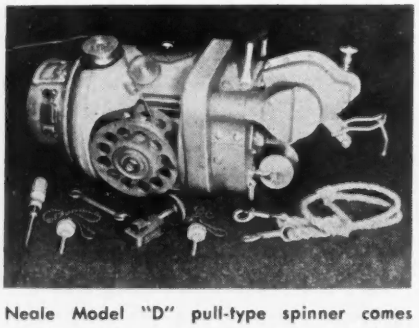
# construction and maintenance DIGEST

- Smooth spinning
- Profitable noise
- 25-year battery
- Positive grip
- Most for the least
- Wires' Shangri-la
- A lasting wire
- 3 ways better
- New and phenolic
- Slim conductors

'ublished regularly to help you get the most ut of your materials and supplies dollar

*by John W. Garbutt, Inside Sales—Rochester*

As a volunteer fireman I have to be alert at all times, just as Stromberg-Carlson is always alert to meet your supply needs. We're "on the job" for you 24 hours a day—because telephony is our full-time job, not just a sideline. Every order we fill for you brings you fine products, protected by a double guarantee—ours, and the maker's. And the attention given to your order is as careful as if our total program depended on it—because it does! Your supply business makes possible the research program that discovers new and better telephone equipment—to serve you. It's a pleasure to be working with you—we sincerely appreciate your support!



Neale Model "D" pull-type spinner comes complete with metal reinforced plywood chest, lashing wire clamp, two adjustment wrenches, screwdriver, open end wrench, and tow rope.

### No slack, no slip when spinning cable

The Neale Model "D" may be used for the placement and spinning of new cable—or for maintenance spinning of existing cable. It is specially designed to operate on ball bearing races, and has a double drive mechanism that eliminates slippage. The Model "D" offers instant adjustment for all sizes of cable—from minimum size to a maximum diameter of 2¼". A ratchet on the strand wheel makes it impossible for the spinning wire to slack off when pull on the tow line is released. Size of machine: length 24", diameter 10".

### Noise can be money!

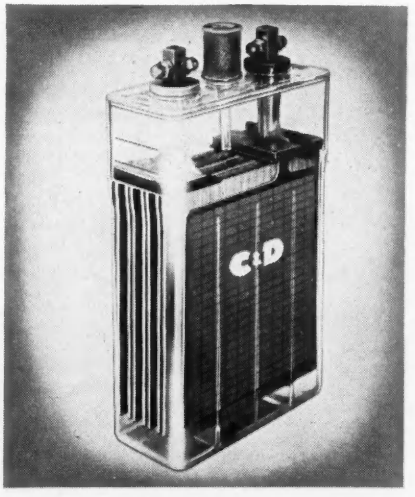
Take a business subscriber who has a telephone in some extremely noisy location—and who has finally decided to do something about it. Would you rather have him spend money in building a soundproofed booth—or give you the money as monthly income on a telephone which completely licks the noise problem?

The GAI-PHONE is such an instrument. It has a special transmitter that actually creates a "Zone of Quiet" around the handset—even in a spot as noisy as a boiler factory! It costs the subscriber less than a booth—and you get the revenue!

Ask us for complete details.

### Battery will live 25 years

A quarter of a century is the expectancy of an extra-life battery made by C & D Batteries, Inc. In full-float service, their PlastiCal (lead calcium grids) battery will serve your power needs faithfully—often well beyond its 25-year expectancy.



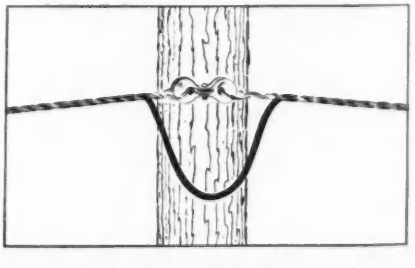

It'll be 1982 before you even have to *think* about replacing this extra-life C & D battery, if you install it now!

C & D Batteries' PlastiCell (high tensile, special alloy grids) battery offers reliable power supply at lower cost, with a life expectancy of 14 years.

You can get both of these C & D extra-life batteries from Stromberg-Carlson.

### Pressure is widely distributed

To provide an even, positive grip, Preformed Dead-Ends for Self-Supporting Plastic Cable are designed so that low radial pressure is distributed over a large area.



Available for 6, 11, 16 and 26 pair 19 AWG Self-Supporting Cable.

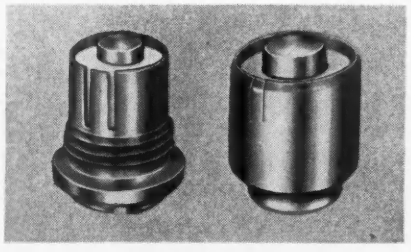
You have no high stress points to worry about, and no sharp bends in the cable are required. PLP Dead-Ends hold the full-rated strength of the Self-Supporting Cable and will not damage the outer covering or internal members.

You can easily apply these Dead-Ends by hand, without tools. Simply insert one leg through a standard hardware thimble clevis and wrap the legs around the cable.

Preformed Dead-Ends are specifically designed for safe use with plastic-covered multiple cable.

### Arrester gives maximum protection

With the Cook Mytigap Arrester you get the utmost in cable terminal and substation protection at low cost.



Mytigap Arresters.

Cook Electric Company's Mytigap is a lightning arrester and power-cross protector in one, featuring self-restoring operation after functioning. It is available in 2 styles: a snap-in type to fit Cook terminals and a type that is made with special screw-type housing for general applications.

Mytigap Arresters require minimum attention or service. Internal parts are readily accessible for easy field replacement if damaged by extreme disturbance.

This arrester represents the most advanced high-potential dischargers for line and cable protection.

### Here's a drop wire that hides its age

Samples of Whitney Blake Teleprene® (neoprene jacketed) drop wires were strung where they would get lots of weather. After nine years, they still looked fresh and undaunted – and tests showed that these wires would give years and years **more** of good service!

The jacket is a tire-tread type neoprene compound which provides excellent resistance to sunlight, abrasion, oils, acid fumes, alkalies and other corrosive chemicals.

Conductors have Teleplate coating: lead, to resist corrosion, and brass plating over the lead, to provide enduring adherence of the

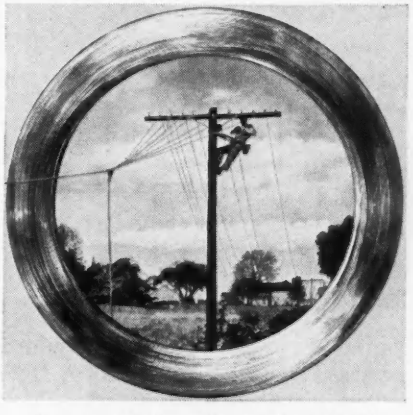
Available in parallel (shown here), twin parallel and twisted pair types.

high quality buna rubber insulation to the conductor.

### This top performer brings you low-budget operation

If you'd like to reduce the cost of installing and maintaining telephone lines, may we suggest a rugged wire that staunchly defies wind, ice, and snow?

Copperweld Telephone Line Wire is known as a faithful friend, having wonderful transmission qualities and long, rust-resisting life. It lasts and lasts and lasts—saves you maintenance or replacement costs.



Copperweld Line Wire "talks better," and cuts your maintenance costs.

For short subscriber loops and secondary toll lines, we recommend .080"-30 E.H.S. and for toll lines and long subscriber loops, .104"-40 H.S.

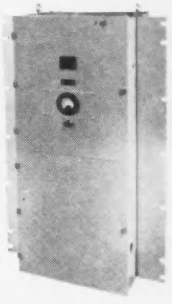
### Raytheon Rectricharger® Battery Chargers—Complete Line 3-400 Amperes

Entirely redesigned new Raytheon Rectichargers offer three major improvements:

1. ±1% no-load to full-load stabilization prevents battery overcharging, minimizes gassing, lengthens battery life.

2. No audible hum at output terminals.

3. Most compact units on the market—wall or rack mounted.

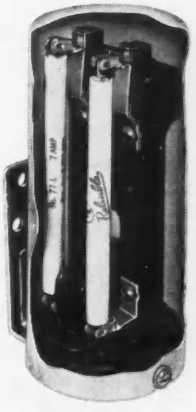


New Raytheon battery chargers feature ±1% no-load to full-load regulation

Automatically compensated for rectifier aging, Rectichargers offer high efficiency, completely automatic regulation. No moving parts and self-protecting circuitry assure minimum maintenance, long life. Single and three phase, 3-400 amps.

### New Design Station Protector

For a station protector with really new features, specify the Reliable Series 2000 Protector.



All metal parts are bronze, aluminum or stainless steel.

This new protector replaces the Series 1000—and only the time-proved Reliable Discharge Blocks and Fuses remain unchanged. Quality and performance are better than ever.

The new protector comes with a phenolic fuse mount (rather than porcelain); a flexible neoprene base with integral wire entrance sealing slots (instead of open wire holes); and a redesigned fuse mount and terminal post that permit putting wiring snugly in place without removing fuses. The fuse mount can be easily reversed to wire from right or left.

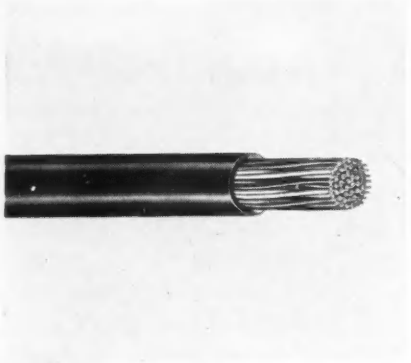
(*Continued on Page* 100)

(Continued from Page 99)

## construction and maintenance digest

**Low Cost . . . Easy To Install**
**Type 1255 Inside Wiring Cable**

To get economy plus ease of installation, specify Ansonia Inside Wiring Cable, Type 1255.



Economical and rugged Ansonia Type 1255 Cable. Supplied in 22 and 24 gauge vinyl-insulated fully color-coded brown (or ivory when specified) vinyl jacket with #29 rip wire.

Its small diameter conductors are insulated with 12 mils of color-coded plasticized polyvinyl chloride. Conductors are paired and cabled with a steel rip wire to facilitate stripping of the tough exterior plastic jacket.

This Ansonia Wire & Cable Company product is available in brown or ivory.

---

*Did you know* . . . that the Stromberg-Carlson general catalog has more than 100 pages of maintenance and construction supplies alone? You can do *all* your business "under one roof" and find the same quality and reliability in every item.

---

*Distributed by*

**STROMBERG-CARLSON**

A DIVISION OF GENERAL DYNAMICS CORPORATION

Sales Offices: Atlanta 6, Chicago 6, Kansas City 8, Rochester 3, San Francisco

proper rate base, is the maximum a telephone company should be allowed to earn," he said. "Some commissions undertake to make it even less than six percent. The fact is that six percent is not enough, under present and prospective money conditions, to put telephone companies in a position to meet the unprecedented demand for more and more telephone service."

Mr. Villas discussed a new customer long distance dialing method which will enable telephone customers to dial many of their calls directly to certain cities and towns in Minnesota and across the nation without going through an operator.

"The long range plan is ultimately to turn all of the United States and Canada into one vast dial telephone exchange where you can pick up your telephone and dial any other of the 65 million telephones in the United States or Canada," he said.

---

### Clyde T. Foster Joins Superior Cable Corp.

THE APPOINTMENT of Clyde T. Foster as a sales engineer at Superior Cable Corp., Hickory, N. C., was recently announced by James H. Bowman, vice president — sales.

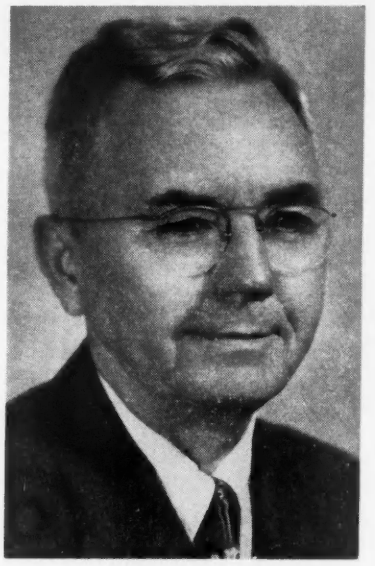
Mr. Foster served seven years in the U. S. Army and Air Corps, during which time he installed and maintained all types of telephone and telegraph equipment, was an instructor and later a communications chief.

Following his military service, Mr. Foster was employed by the Southern Bell Telephone & Telegraph. He was a construction superintendent and later an inspector and resident engineer for the construction of REA and Independent telephone systems for the C. M. Allen Co., L. E. Wooten Co. and Southern Engineering Co. He comes to Superior Cable from the Lehigh Engineering Co., a firm of consulting engineers.

### John Jaap Dies

JOHN J. JAAP, a well-known pioneer in the telephone industry, passed away on March 20 in Dallas, Texas, at the age of 68.

Mr. Jaap joined the Cook Electric Co. in 1914, and served in various capacities the entire 43 years. Originally in manufacturing, he soon emerged into advertising and sales. His sales work brought him into contact with all sections of the telephone industry, where he was widely known and universally liked.



JOHN J. JAAP

At the time of his death, Mr. Jaap was vice-president in charge of the Wirecom Division of Cook Electric Co.

Mr. Jaap is survived by his widow, Alice, and a daughter, Mary Beverly.

### D. Walter Brown Dies

D. WALTER BROWN, 153 Vasser St., Rochester, N. Y., for many years manager of Stromberg-Carlson's Rochester telephone sales office, died February 24, at the age of 78.

Mr. Brown joined Stromberg-Carlson in 1903. His first job was a cable winder, but he advanced rapidly through the Stock Room and Cost Department, and entered sales work in 1910.

He was appointed manager of the Rochester sales office of the Telephone Division (now the Telecommunication Division) in 1926. In that capacity he had charge of all sales activities of the company's Telephone Division in the northeastern United States. He retired in 1949.

Mr. Brown leaves his widow, Harriet, and two daughters, Mrs. Bruce F. Cowley, of Rochester, and Mrs. Richard Henderson, of Decatur, Ga.

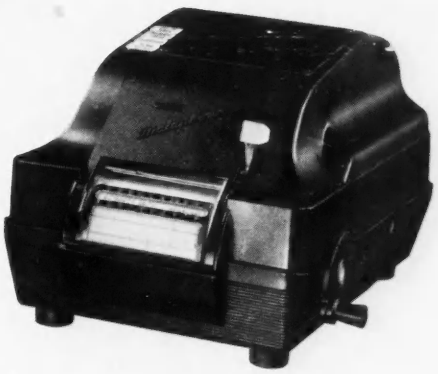
### Eric Brooke Dies

ERIC BROOKE, chief engineer, North Electric Co., Galion, Ohio, who was responsible for major engineering assignments as established by North's president and represented the firm in dealings with nation-wide telephone problems of technical nature, died last month.

Born in Ryde, Isle of Wight, Eng-

# FOR DIRECTORY-WEARY SUBSCRIBERS

## DIALAPHONE— the new accessory that makes calling faster, easier



Finding numbers in a bulky phone book is tiring and time-consuming. And now—with Dialaphone—it's unnecessary!

To make a call, the subscriber simply spins a handle; quickly the name of his party appears on a specially-prepared, rotating index. To dial, he merely presses a button. That's all there's to it. *Dialaphone dials the number for him!* What's more, it dials with speed and accuracy—eliminates errors. Up to 850 separate listings can be placed on the index.

For subscribers who use the telephone often, Dialaphone is a wonderful convenience; they'll gladly pay extra for it. *Call your Automatic representative or your nearest A. E. Sales Corporation warehouse.*

Chicago 7, Ill. HAymarket 1-4300 | Johnson City, N. Y. Binghamton 7-8507 | Richmond 21, Va. Tel. 6-9280 | Kansas City 8, Mo. HArrison 1-4720 | Portland 10, Ore. CApital 3-7244

AUTOMATIC ELECTRIC

ORIGINATORS OF THE DIAL TELEPHONE

*One squeeze*

**SERVES GUY STRAND WITH KEARNEY GUY WIRE CLIPS**

Here's the fastest way to neatly and permanently serve up strand ends. The half-formed clip slips easily onto the guy wire and end. It's closed with a squeeze of the KEARNEY Guy Wire Clip Tool . . . or with an ordinary pair of pliers. The whole job can be done in less than a minute.

KEARNEY Guy Wire Clips are available in six sizes of aluminum, galvanized iron and copper.

*For Better Construction . . . Safer Maintenance*

*Specify*

271

**KEARNEY PRODUCTS**

JAMES R. KEARNEY CORPORATION

4224-42 Clayton Avenue, St. Louis 10, Mo.

*Canadian Plant: Guelph, Ontario*

**ERIC BROOKE**

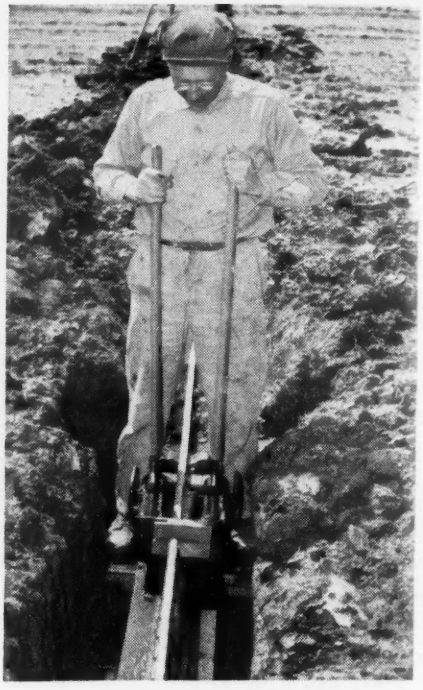
land, Mr. Brooke attended the John Samuel White Marine Technical School in England, from 1915 to 1922, studying to become a marine engineer. While working in shipyards, Mr. Brooke became interested in electrical problems encountered in ship construction and decided upon this profession as a career.

Using the electrical knowledge he had gained in the shipyards, Mr. Brooke ventured into his own electrical contracting firm and worked in the radio field during its formative stages in England.

Knowing that radio science was much advanced in the United States, Mr. Brooke left England in 1926 with sights set on a radio engineering job in Erie, Pa. However, there was a lengthy waiting period before the position became available, and a temporary job, which soon became permanent was procured.

His first position in America was with the Mutual Telephone Co. of Erie County (now General Telephone Co. of Pennsylvania) where Mr. Brooke progressively served as station inspector, repairman, switchman, wire chief and traffic engineer. In 1931 he transferred to Commonwealth Telephone Co. of Wisconsin (today, General Telephone Co. of Wisconsin) as dial traffic engineer. In 1932, Mr. Brooke moved to Indiana Associated Telephone Corp. (General Telephone Co. of Indiana) as traffic and commercial superintendent, a position he held until he joined North Electric in 1938.

Serving in such capacities as sales engineer, commercial engineer, chief engineer — Telephone Division, plan-

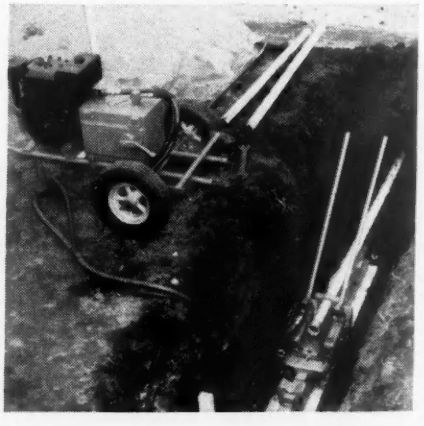



**FAST, LOW-COST WAY TO INSTALL PIPE . . .**

**push it under streets, roads, tracks, lawns with a timesaving**

**GREENLEE HYDRAULIC PUSHER**

Speed underground piping jobs this way. GREENLEE Pusher is one-man-operated (by hand or with power pump), portable, simple to set up and use. No tearing up of pavement, floors, lawns . . . does away with extensive ditching, tunneling, backfilling, repaving. GREENLEE Pusher cuts job time to a fraction . . . often pays for itself on first job.



**Two feet per minute average pushing time**

GREENLEE Pushers are available in two sizes: No. 790 for ¾" to 4" pipe . . . No. 795 for pipe over 4", concrete sewer pipe, large ducts. Average performance of No. 790, shown above with power pump, two feet per minute. Write for literature.

TOOLS FOR CRAFTSMEN

GREENLEE

**GREENLEE TOOL CO.**

2004 Columbia Avenue • Rockford, Illinois

ning engineer on president's staff, and asistant director of development, Mr. Brooke participated in many new developments by North Electric. Visiting Sweden during the summer of 1954, Mr. Brooke became active in North's new Crossbar Switching System, a project in which he had played a major role in development and sales during the past three years.

Mr. Brooke lived at 422 Gill Avenue in Galion, with his widow Anne and son William. A daughter, Sheila, attends Bowling Green University. With spare time projects such as the Boy Scouts, Mr. Brooke also was vice-chairman of the Communication Switching Committee of the American Institute of Electrical Engineers.

## Appointments Announced By Columbus McKinnon

TOM R. MORRISON, Glen Burney, Md., has been appointed direct factory representative in Delaware, Maryland and Central Pennsylvania for the Columbus McKinnon Chain Corp., and its Chisholm-Moore Hoist Division.

Arthur H. Luchs, headquartering in San Francisco, has been appointed direct factory representative in Northern California and Nevada for the chain products line of the corporation.

## Hubbard & Co. Announces New Sales Appointments

APPOINTMENTS of a general sales manager, three division sales managers, and two district sales managers for Hubbard & Co., Pittsburgh, Pa., have been announced by Raymond M. Waggoner, executive vice-president and general manager.

John E. Wennogle is the new general sales manager, at Pittsburgh. Clifford H. Keen was named division sales manager of the Northeastern Division, with headquarters at New York City; Fred T. Campbell of the Southeastern Division, with headquarters at Richmond; and Frank D. Gibson of the Atlantic Division, with headquarters at Philadelphia. Virgil E. Lown was named district manager at Salt Lake City, and A. C. Mowery district manager at Portland, Oregon.

Mr. Wennogle joined the company in 1934 and was made district manager in New England in 1934. He was promoted to division sales manager for the New York area in 1954.

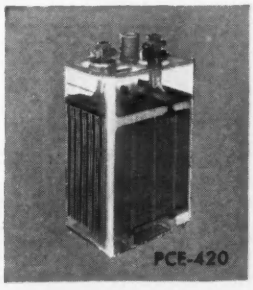
Mr. Keen started with the company


**Telephone batteries engineered for—**

25

**years of service**

**C & D PlastiCal®**




If you want extra-long life from batteries in telephone service—be sure to specify C & D PlastiCal® batteries.

Here is the original lead-calcium telephone battery that provides at least 40% longer life than conventional telephone batteries. With C & D PlastiCal telephone batteries you get:

- **Reduced maintenance**—Electrolyte level can be checked at a glance; cells require 1/5 as much water as conventional batteries.
- **Lower in-place cost**—Rugged one-piece plastic case is 20% lighter than glass; reduces shipping and breakage costs.
- **Increased safety**—C & D's patented Saftee-Vent eliminates the chance of accidental explosions; serves as funnel for filling.

These plus many other benefits mean that in the telephone field, C & D is—

**Your better battery buy!**

*Literature available*

Write for complete description and specifications in C & D PlastiCal Bulletin T-528.

**C&D BATTERIES, INC.**

*of Conshohocken, Pa.*

SINCE 1906

SALES AND SERVICE OFFICES IN PRINCIPAL CITIES FROM COAST TO COAST

THIS NEW
CHANCE
TELESCOPING TRIP AUGER
DIGS HOLES 20% FASTER

Here's a completely new, ruggedly built earth auger —especially designed for line work.

Due to the particular design of its fast cutting, high strength blades our linemen were able to dig holes 20% faster with this new auger than with the previous model.

The handle telescopes for digging deep holes. Extension rod locks at 6-inch intervals. The reamer blade can be expanded and set to bore nine sizes of holes with the same auger. A smooth working trip mechanism opens the movable blade to make dirt dumping easy.

Five models are available for digging holes from 6½ to 14⅜ inches in diameter, and from 8 to 12 feet deep.

Consult pages 6-9 in your Chance Catalog —or ask your Chance Distributor to show you this new auger.

A·B·CHANCE CO·
CENTRALIA, MISSOURI,
CT56-14

BEST... FOR SERVICE STATIONS

the B-N Booth
attracts revenue with its colorful, clean appearance... retains profits with sturdy maintenance-free construction.
Consult your distributor or write direct for folder... Benner-Nawman, Inc., 3421 Hollis Street, Oakland 8, California.
a B-N booth is a busy booth!

Stewart
TEST EQUIPMENT
Locates Line Trouble FAST
1000 Cycle TRANSISTOR OSCILLATOR
MODEL

A Stable power source, for locating trouble in carrier systems and audio equipment.
Self contained mercury battery with operating life over 700 hours
Pocket size, 2¼" x 3" x 4", Wt. 10.3 Oz.
STEWART BROTHERS
Division of Instrument Laboratories
Chicago 10, Illinois

in 1923 following graduation from Dickinson College. He was appointed assistant general sales manager in 1955. In his new assignment, he will also be in charge of export sales.

Mr. Campbell joined Hubbard & Co., in 1950 after graduation from Virginia Polytechnic Institute in industrial engineering.

Mr. Gibson began his sales career with the company's tool division in 1922. He transferred to general pole line hardware sales in 1931.

Mr. Lown joined Hubbard & Co. in 1950 at the Oakland, Calif., plant, and has served recently as manager of inside sales. He attended the College of the Pacific and the California College of Arts and Crafts.

Mr. Mowery started with the company in 1954.

## Electrical Communications Advances S. I. Pichey

SAM I. PICHEY has been named sales manager for Electrical Communications, Inc., maker of electronic and electrical equipment, including telephone and industrial control apparatus. He will make his headquarters at the company's main offices,

S. I. PICHEY

765 Clementina St., San Francisco, Calif.

Mr. Pichey joined the company in 1953 as production manager, a post he held until his recent transfer to the sales department. He was formerly associated with Textile Service Co. and Kaiser Aircraft. Before coming to the west coast, he was methods engineer for Toro Manufacturing Co., Minneapolis.

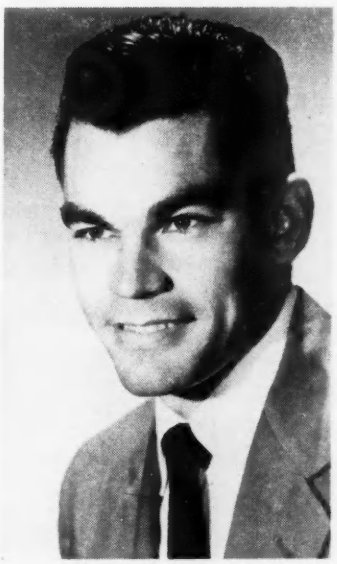
Electrical Communications is best

known as the maker and developer of the Secode selector which is used widely in the United States and foreign countries to effect selective ringing of telephones and for remote control of electrical apparatus. The 30-year old firm recently expanded its sales organization to include application engineering representatives in all key areas of the country as well as abroad. Mr. Pichey will coordinate the activities of the field sales organization and will be in charge of market planning.

### Whitney Blake Announces New Sales Representatives

ANNOUNCEMENT of the appointment of new sales representatives and the opening of new sales offices for Whitney Blake Co., wire and cable manufacturer of New Haven, Conn., has been made by J. Marshall Taylor, vice president.

Donald J. Smith, with headquarters in Seattle, Wash., will assist Whitney Blake's established representatives, H. C. Mitchell, Jr., and S. M. Sherman in the Rocky Mountain and West Coast areas.



DONALD J. SMITH

Mr. Smith spent 10 years with General Telephone Co. of Calif. and its predecessors. He has been an outside plant engineer and was head of the methods engineering group responsible for preparing material specifications and writing construction practices for outside plant and station installations.

Another addition to the Whitney Blake sales staff is Joel L. Hodges, Jr. Mr. Hodges has taken over the

*Please turn to page 108*


Announcing the New

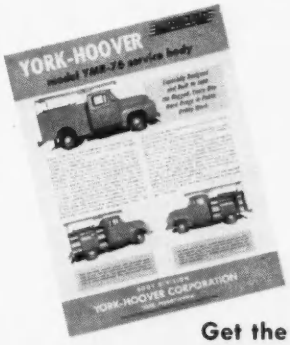
# YORK-HOOVER

## model YMR-76 service body

Designed and Built to perform Service Jobs Faster, Safer, more Economically for You!

**MODERN – PROVEN – EFFICIENT**

- The Model YMR-76 is designed to provide more space for the convenient carrying of materials and tools. A thru material drawer in rear compartment and a thru compartment at front is particularly useful in addition to other specialized cabinet arrangements.
- "Custom" construction features include four sturdy cross members beneath the steel treadplate floor for greater base stability . . . a deep drop gate at the rear, especially designed to prevent sagging . . . easy-action telescoping roof . . . and double panel compartment doors incorporating galvannealed non-corrosive steel.
- Invest in the model YMR-76 service body. It's new—modern—proven—efficient. It will provide trouble free service over a long period of years for you!




**Get the complete story on the York-Hoover YMR-76 Service Body. Write for Bulletin No. 942 Today!**

BODY DIVISION
**YORK-HOOVER CORPORATION**
YORK, PENNSYLVANIA

*Creative Engineering for the Public Utility Industry Since 1892*

# THE CLEARING HOUSE

**Published in each issue of Telephone Engineer & Management. Advertising forms close on 1st & 15th of month. Rates 15 cents a word except for Situation Wanted ads, which are only 10 cents per word. In figuring cost of ads, count each word of address in number of words used. All ads payable in advance. Minimum charge—$2.00. Special rates for display ads on request. Send copy and box number replies to Telephone Engineer Publishing Corp., 7720 N. Sheridan Road, Chicago 26, Ill.**

## HELP WANTED

CABLE SPLICERS, Station Installers, Equipment Installers, Linemen. Experienced men needed. Steady work, good pay. Henkels & McCoy, 1211 Kenmore Avenue, Elkhart, Indiana, or 6100 N. 20th St., Philadelphia, Pa.

WANTED: Appraisal Engineer capable of supervising crews with knowledge of automatic central office equipment. Permanent. Will be located in Ohio. Reply Box 9065 Telephone Engineer Publishing Corp. 7720 N. Sheridan Road, Chicago 26, Illinois.

PLANT ENGINEERS — For large Independent Telephone Company. Some experience necessary. In reply state age, educational and employment history. Address reply to Personnel Supervisor, Rochester Telephone Corporation, 10 Franklin Street, Rochester 4, New York.

MANAGER WANTED: Manager for Rural Telephone System located in Shelby County, Iowa, consisting of about 1200 stations. Must have administrative ability to achieve and maintain efficient operations and develop sound expansion programs, ability to hire, train and direct personnel in all phases of telephone operations. Technical, plant and commercial knowledge and experience desired. Permanent position carrying substantial opportunity for qualified person. Replies confidential. Please write Farmers Mutual Co-op Telephone Company, Harlan, Iowa, and request application form.

## FOR SALE

FOR SALE: Almost new Stromberg-Carlson Switchboard in service less than five years. 2 pos. x 106 junior multiple, machine ringing, equipped with 220 C B Local lines, 60 lamp ended rural lines, 20 lamp ended toll lines, 30 (4) party universal cord circuits 48 volts, complete with line relay rack, power panel, S. C. Multi frequency interrupter, emergency converter, main frame with Cook #100 protectors, Batteries and #150-B-3 amp Flotrol charger.

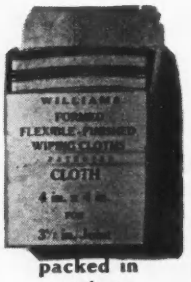
Augusta Telephone Co.
Augusta, Michigan

## SITUATION WANTED

**FOR SALE**
**WESTERN ELECTRIC NO. 392 LOUD BELLS**
**Refinished and tested, with condenser — $6.00 each.**
**Telephone Equipment, Inc., Montrose, Mich.**

## FOR SALE

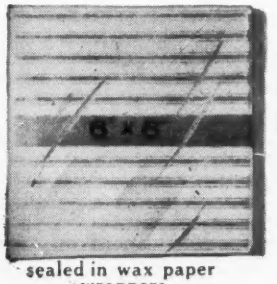
SITUATION WANTED: To manage Telephone Exchange. Twenty five years managing and technical experience. South preferred. Write Box 9064 Telephone Engineer Publishing Corporation, 7720 N. Sheridan Road, Chicago 26, Illinois.



packed in cartons

**WIPING CLOTHS**
**Cable-Splicers**

Formed-flexible finishing cloths; (Patented); Flat finishing cloths; Catch cloths; Crotch cloths and Up-right joint catch cloths. Made of world-prize HERRINGBONE TICKING or imported English MOLESKIN. Write for literature and prices.



sealed in wax paper wrappers

**GEO. E. WILLIAMS CO.**
3035 Aldrich Ave.. South, MINNEAPOLIS 8, MINN.

# SWITCHBOARDS

**KELLOGG No. 2007 Cordless PBX (Masterbuilt Type). 5 Trunks, 20 Stations, 5 Connecting Circuits with line relays.**

**KELLOGG No. 1007 Cordless PBX (Masterbuilt Type). 5 Trunks, 12 Stations, 5 Connecting Circuits with line relays.**

**KELLOGG No. 1007 Cordless PBX (Masterbuilt Type). 3 Trunks, 10 Stations, 5 Connecting Circuits less line relays.**

**STROMBERG-CARLSON No. 125 Magneto Switchboard (Late Type). Equipped with 40 Lines and 7 Cord Pairs with repeating coils.**

*Whatever Your Needs . . . It Pays to Call BUTELCO*

**BUCKEYE TELEPHONE & SUPPLY CO.**

P.O. Box 5707 Phone HU 8-0655 Columbus 21, Ohio

# Professional Services

## FOR SALE

400 Line, W. E. Common Battery Switchboard and Complete C. O. Equipment. Equipment is ap-approximately nine years old. It was cut out of service a few months ago.

Can be purchased at Low Reduced Price.

Write W. J. Holladay, Gen. Mgr.,
ALABAMA TELEPHONE CO.,
Fayette, Alabama

## Let A Low Cost PROFESSIONAL AD In Telephone Engineer & Management Do The Job For You

## Installation Specialists

CENTRAL OFFICES
Installed-Modified-Removed
COMMUNI-CATERING
All Makes
P. O .Box 6712
CHICAGO 7, ILLINOIS

## Davis Construction Co.

UTILITY PLANT CONSTRUCTION
45 North Clark Street • Sullivan, Missouri

Construction Crews  Station Installers
Central Office Installations
Cable Splicers  Complete Engineering

## HENKELS & McCOY

6100 North 20th Street Philadelphia, Pa.
*Now Operating in 30 States*
OFFICES LOCATED AT
Elkhart, Ind. - Tel. 2-5650
Norwalk, Ohio - Tel. 3-0231
Lansing, Mich. - Tel. IV-5-7642
Pekin, Il. - Tel. 6-6336
Erie, Pa. - Tel. 2-4300
Sumter, S. C.
*PERFORMANCE Has Built Our Business*

## SLOAN, COOK & LOWE

CONSULTING ENGINEERS
Suite 1344  120 South La Salle Street
CHICAGO
Appraisals—Original Cost Studies
Depreciation, Financial, and Other Investigations

## TELEPHONE PRINTING

By People Who Know the Telephone Business.
See the Suttle Catalog
SUTTLE EQUIPMENT CO.
LAWRENCEVILLE  ILLINOIS

## JAY G. MITCHELL

CONSULTING ENGINEER
APPRAISALS—COSTS—PLANT
7720 SHERIDAN ROAD  CHICAGO
FOR MAIL BOX 523  EVANSTON, ILLINOIS

## CARL C. CRANE, INC.

*Consulting Engineers*
2702 Monroe Street, Madison 5, Wis.
Telephone CEDAR 3-4210

## What You Want When You Want It

Immediate Shipment from Nearest Warehouse Points
TELEPHONE & POWER SUPPLY, INC.
TOPEKA, KANSAS  PHONE 4-8788

## Save Money and Time!

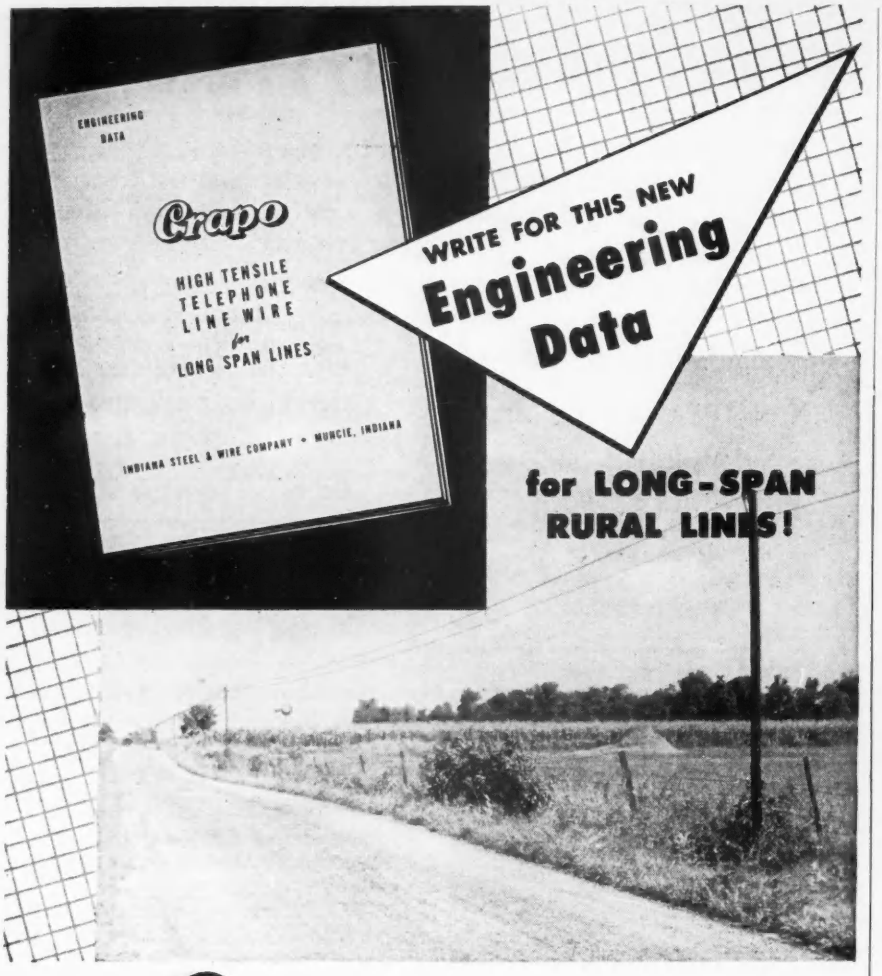
TELEPHONE PRINTING SPECIALISTS FOR 49 YEARS
TOLL TICKETS ILOUT on Bond Paper ONLY 40¢ THOUSAND (MIN. 25,000)
TELEPHONE 42-3341
CULLOM & GHERTNER CO.
*PRINTERS • LITHOGRAPHERS*
600 21ST AVE., N. • NASHVILLE, TENN.

## TUDOR AND YAGER, INC.

TELEPHONE CONSTRUCTION
TIPTON, INDIANA
Phone OSborne 5-2267

## INSPECTION SERVICE

Of poles, crossarms, and preservative treatments. Analysis of wood preservatives. Consulting and specification writing. Inspectors stationed throughout the U.S.A.
A. W. WILLIAMS INSPECTION CO., INC.
MOBILE, ALABAMA
Established 1921 — Member A.C.I.L.


ENGINEERING DATA
Crapo
HIGH TENSILE TELEPHONE LINE WIRE for LONG SPAN LINES
INDIANA STEEL & WIRE COMPANY • MUNCIE, INDIANA
WRITE FOR THIS NEW
Engineering Data
for LONG-SPAN RURAL LINES!

SPECIFY *Crapo* HIGH-TENSILE
TELEPHONE LINE WIRE FOR LOWER OVERALL COST

Crapo HTL-85 — INDIANA STEEL & WIRE CO. MUNCIE, INDIANA U.S.A.
For Medium Long Spans

Crapo HTL-135 — INDIANA STEEL & WIRE CO. MUNCIE, INDIANA U.S.A.
For Longer Spans

Crapo HTL-190 — INDIANA STEEL & WIRE CO. MUNCIE, INDIANA U.S.A.
For Extra Long Spans

● FEWER pole structures are required where *Crapo* High-Tensile Line Wire is used in building rural telephone lines. This means substantial savings in time, labor and material. There are fewer holes to dig and poles to set, less material to be handled, installed and connected — all of which contribute to lower overall construction costs.

*Crapo* High-Tensile Line Wire also makes for lower maintenance costs. Its superior tensile strength offers increased resistance to ice and wind loads . . . provides a greater margin of safety. Heavy galvanized coatings assure dependable, lasting protection.

For maximum savings in the construction and maintenance of rural telephone lines, specify the *Crapo* Telephone Wire which best fits your requirements.

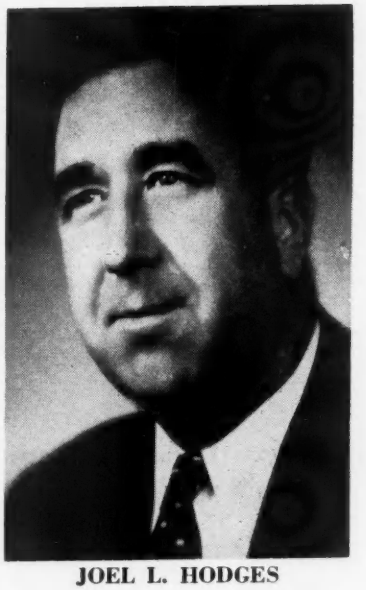
*LATEST ENGINEERING DATA, including Stringing Sags and Tensions, Staking Tables and Guying Tables for Heavy, Medium and Light Loading Districts, are now available. Write today for your copy of Data Book No. N-53.*

INDIANA
STEEL AND WIRE CO., MUNCIE, IND.

*(Concluded from page 105)*

territory that includes Minnesota, North and South Dakota, and small sections of Montana and Wisconsin. His headquarters will be in Minneapolis.

Mr. Hodges was educated at Northeastern University and later was employed by the New England Tele-



JOEL L. HODGES

phone & Telegraph Co. for 15 years. His duties ranged from lineman, combination installer, repairman, foreman to eventually head facilities assignor.

R. R. Meinert who has represented Whitney Blake in the Minneapolis area has taken over the Northern Ohio-Eastern Pennsylvania area. He has established his office in Akron, Ohio.

L. K. Powley who has been in charge of the Northern Ohio-Eastern Pennsylvania territory is opening a new Whitney Blake office in Tampa, Fla., and will serve the Florida and Southern Georgia territory.

## Ray Horne Named Div'n Plant Supt.

RAY HORNE, Northern district manager for Georgia Continental Telephone Co., for the past six years has been appointed division plant superintendent with supervision over plant activities of Georgia Continental's 36 exchanges.

Mr. Horne is a veteran in telephone work. Prior to moving to Georgia in 1950, he served as district manager for Illinois Central Telephone Co., Clinton, Ill. He began his telephone career as an apprentice lineman.

STROMBERG-CARLSON

# Transmitter

A DIVISION OF GENERAL DYNAMICS CORPORATION

News and views of Independent telephone people

VOLUME 6, NO. 1 • APRIL, 1957

## Brookings, So. Dakota has a program

Mrs. Marles Kangas receives an incoming call at F-40 operator's turret, transfers it to the desired station, and resumes her other office duties.

## It starts with an F-40...

In Brookings, South Dakota, a big program of dial conversion is underway. First taste of the good things in store came with the installation of a Stromberg-Carlson F-40 Dial PBX System at the Sexauer Company's main office in Brookings.

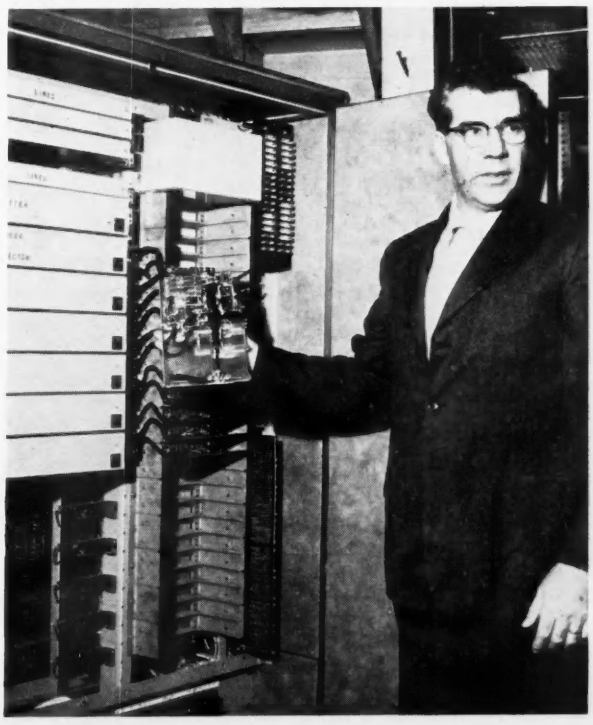
Mr. Charles O'Neill, manager of the Brookings Municipal Telephone Exchange, decided some time ago that the F-40 offered the best answer to the type of PBX service encountered in the medium-sized commercial office. The compact attendant's turret provides manual intercept on incoming trunk calls; extension, hold and transfer facilities for the 25 presently-equipped stations. All outgoing calls through the central office, as well as all inter-office connections, are completed automatically through the dial equipment.

"This turret is a joy to operate," said Mrs. Marles Kangas — operator-receptionist at the Sexauer Company. "I'm amazed at the extra time it allows me for my other duties — takes up so little space, too."

Mr. O'Neill has planned a duplicate installation for the new Brookings Clinic, and a similar but much larger system for South Dakota State College.

"Our commercial customers are delighted with the efficient dial service they have received or will be getting soon. From our point of view, it's nice to know that these monthly rentals are helping to pay for our XY Dial central office as it is being built," added Mr. O'Neill. "Our target date for complete city-wide dial service is the spring of 1958."

Charles O'Neill, manager of the Brookings Municipal Telephone Exchange, examines XY Universal Switch — heart of the F-40 System. Cabinet is quiet, matches modern office equipment, and can be rolled on casters to most convenient location.

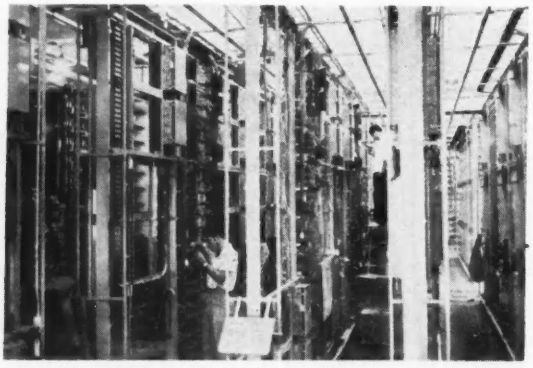


## will soon have XY Dial area-wide.

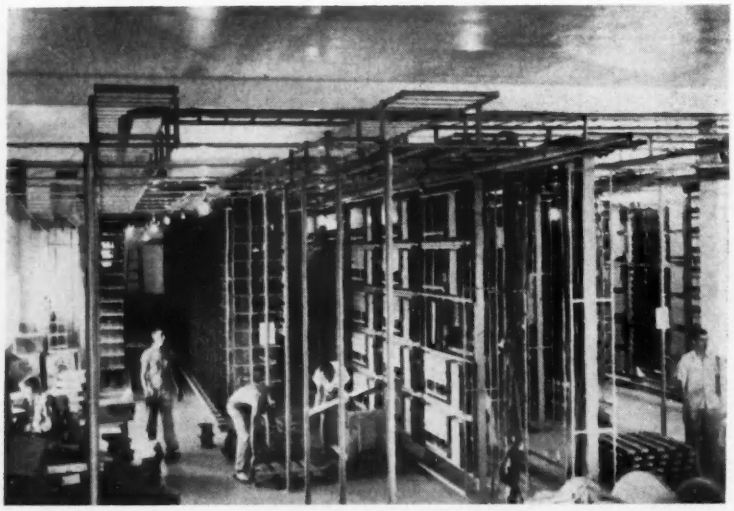
Re-testing every switch at point of installation takes time but pays off handsomely after conversion.

This is easy! All you have to do is find the one right wire out of thousands.

## Progress



At this point you decide that selling apples has its attractions. Takes a lot of good direction, supplied in this case by Edward Winslow, foreman-in-charge.



Equipment for this size office is measured in miles, tons, car-loads.

From here to everywhere . . . au

## Throngs crowd Pentel's large w

# Peninsular plays host t

Yes, it does rain in Florida, and it rained on the day when Peninsular Telephone Company threw open its doors on their largest, most beautiful new dial exchange — at Sarasota, Florida.

Taylor C. Scott, who like most managers in the Pentel system has become used to "thinking big," wondered how he could have handled a larger throng of visitors if they *had* been favored by the brilliant sunshine which annually draws tens of thousands of visitors to this vacation capital.

Sarasota itself is so well known that it hardly needs further mention. Its principal business is as a year-'round resort center; although the population still jumps heavily during the winter season, more and more people are finding that Florida's Gulf Coast is delightful Spring, Summer and Fall. And many who come to visit remain as residents.

Therein lies one of the principal challenges for the Peninsular Telephone Company: to provide the top-grade service for which it has an established reputation, to a population that still exhibits drastic seasonal fluctuations and yet turns up an over-all growth curve that defies any tables

here . . . utiful toll room at Sarasota.

"Customers meet us here." Peninsular buildings add largely to good impression on the community.

## Pride

## arge w exchange as
## nost Sarasota, Florida

previously devised. Just as an example, the company house organ "Hello," in the September 1956 issue, spoke of the 18,425 telephones in Sarasota. In the March issue of this same "Hello," the figure is given as 21,000. That's about 2,500 stations in 6 months. That's growth!

The equipment, both local and toll, has been designed with this in mind. That empty space in the toll room above was not just for visitors! The Stromberg-Carlson No. 3 board — similar to the pattern so well proved-in at the Tampa main office, and recently installed in the Winter Haven toll center — will help to keep for this company its place as pace-setter in complete telephone service.

Taylor Scott (left), manager at Sarasota, his secretary Doris Brown, county sheriff Ross Boyer, and F. Torres, commercial supervisior.

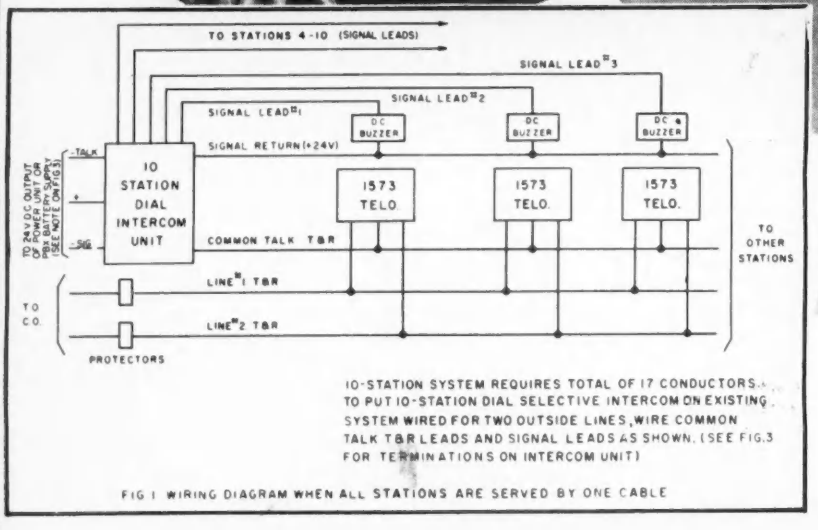
Customers always want to know how the switching equipment works. A demonstration is given by Pentel technical personnel.

Test positions insuring minimum service interruptions impress visitors.

## Profits replace polite refusals:

# Simplified PBX sells self to small subscribers

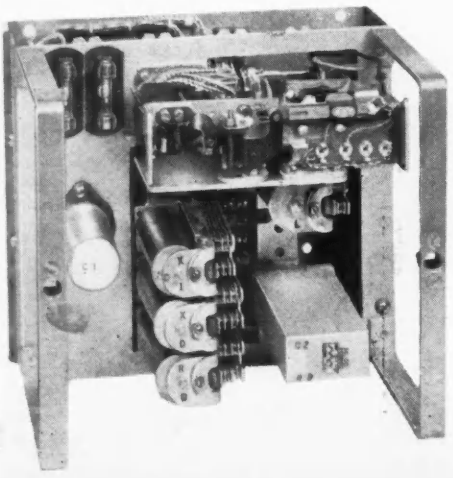
**The widely accepted No. 1573 Two-Line Telephone proves its versatility in this new application in a low-cost PBX System.**




10-STATION SYSTEM REQUIRES TOTAL OF 17 CONDUCTORS. TO PUT 10-STATION DIAL SELECTIVE INTERCOM ON EXISTING SYSTEM WIRED FOR TWO OUTSIDE LINES, WIRE COMMON TALK T&R LEADS AND SIGNAL LEADS AS SHOWN. (SEE FIG. 3 FOR TERMINATIONS ON INTERCOM UNIT)

FIG 1 WIRING DIAGRAM WHEN ALL STATIONS ARE SERVED BY ONE CABLE

**One wiring plan used with 1573 Telephone and 10-Station Dial Intercom Unit, to make simple PBX.**



**Already familiar to many as a standard component of the 6K or 6K-1 System, the 10-Station Intercom Unit provides selective signaling within the PBX.**

This idea may have come from you. At least the problem has been fairly general — the small business office, not financially able to justify the rent on a complete PBX System such as the Stromberg-Carlson 6K-1, or F-40, or any other comprehensive layout, desirable as they are.

Do you just say, "Sorry we can't help you"? Of course you don't! You know that this customer represents income, both present and potential, and you come up with an answer.

That this "answer" is a good one is proved by the enthusiastic response of commercial managers wherever it has been shown. Subscribers like the simple, business-like manner of operation; telephone companies are really surprised at the low cost in relation to established rate structure.

The system is a combination of the standard No. 1573 Two-Line Telephone, with intercom circuit, and the 10-Station Dial Selective Intercom Unit, already widely accepted as a component of the 6K and 6K-1 Systems. The result is a flexible two-trunk Convenience System with fully selective dial signaling for the 10-station capacity of the installation. Common talking within the PBX is also provided through the intercom circuit.

The features of the No. 1573 Two-Line Telephone are known through its general acceptance wherever there is a requirement for two central office trunks, with holding feature on each trunk, intercom circuit and operator recall. By combining this proved instrument with the 10-Station Intercom Unit, a method for dial-selective signaling and common-talking intercommunication is provided . . . . your customer has a PBX, and you pocket the profits.

Scott Gault (center), manager of the LaPlata (Missouri) Telephone Company, inaugurated XY Dial service at his Gifford exchange by this call from Mayor Basil Soupos (right) to his family in Athens, Greece. Another brother, Louie Soupos, who came over from Greece this spring, strains to hear every word of this transoceanic call.

# Really long distance please!

"Ready with your call to Athens, Greece."

The operator struggled to sound pleasantly professional, but for the principal parties to the call there was no need to hide emotions as the magic of clear long distance telephony brought a family together again.

Basil Soupos left his native Greece in 1919. America has been good to him and he has given of himself in return; fellow citizens of Gifford, Missouri, proudly elected him Mayor. His brother and sister in Athens, who had not seen him since he left, went to the corner bakery to receive the call; will always remember that evening when the telephone united them with their brother in America.

---

# the editor's mail

***Brownwood, Texas***

Stories of progress come out of the Brownwood, Texas, headquarters of the Southwestern States Telephone Company with great regularity. This time, however, the story passed along by Jim Young — Stromberg-Carlson representative — concerns people.

The first has to do with engineering changes announced by Mr. H. N. Hammond, Chief Engineer. Tommie De Hay has been named Equipment Engineer to succeed Josh Halbert; Dorman Dunway assumes the post of Fundamental Planning Engineer. At the same time Thomas McCallum and Larry Ross were promoted to new responsibilities in the engineering group.

In a second change, Mr. R. L. Post has been engaged as Public Relations

Mr. R. L. Post

Director, replacing Mr. C. N. Davis who has resigned to devote his full time to the Independent Telephone Directory Company, which has been organized recently with general offices in Corsicana, Texas.

Good wishes to all these men in their new posts.

***Hazard, Kentucky***

The Sterling Hardware Company operated a prosperous business here — until the rampaging floods of January 29 washed it downstream, along with all records and quite a bit of their inventory.

"Please send us a catalog, and tell us if you are in a position to assist us by supplying parts or repairing your merchandise. Our damage was terrific."

We hope our catalog, mailed the day your letter was received, Mr. Eversole, will help identify our products. What can we do next?

Mr. G. D. Harris, supervisor of Advertising Services, and Miss Mary Lou Davis rush catalog to flood-stricken customer in Kentucky.

## Early Spring Changeover

# In Missouri and Idaho

Friends and well-wishers gather to congratulate Mr. and Mrs. Luin Smith as Van Buren, Missouri, opens doors on new XY Dial exchange.

Mr. and Mrs. Smith of Van Buren, with Elmo Landrie (right) Stromberg-Carlson service engineer.

"We've worked hard and long for this." Mr. and Mrs. D. F. Monsen of Aberdeen, Idaho, in the power room of their new dial office.

"So easy to add another circuit." Ernie Larson of Stromberg-Carlson (left), with Duan Monsen of Aberdeen Telephone Co., Charlie Parker of Mountain States Tel. and Tel. Co., Wayne Erwin of REA, and (right) Mr. D. F. Monsen, president of Aberdeen (Idaho) Telephone Company.

The fresh, clean smell of Spring is all around us, and people start thinking of the garden, the trout stream or a quick 9 holes before supper. The two telephone families shown here will have a little more chance to relax now that their offices have been converted to XY Dial operation.

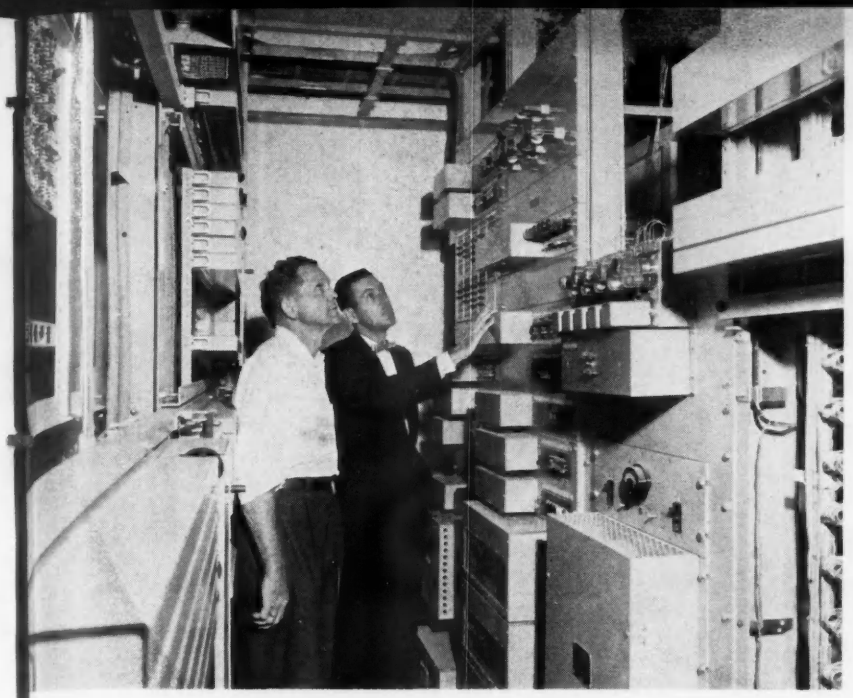
At *Van Buren, Missouri*, Mr. and Mrs. Luin Smith have just completed installation of a 200-line system, and during the first 30 hours of dial service 2,573 calls appeared on the meter.

The first calls were made by Tom Clayton, who called Guy Griffin in Houston, Texas and Tim Burris in Alburquerque, New Mexico. It was an old-time reunion for the three men, as all were linemen for the company in 1918, working for Mr. P. D. Smith, father of Luin.

Mining had brought a boom to the area many years ago, but slack times following this had reduced telephones in service to a mere 55 when Luin Smith came back into the business. The sevenfold increase since then is partly a tribute to better times and equally a testimonial to good management.

*Aberdeen, Idaho*, is in a very rich farming area, made famous throughout the country by that gourmet's delight — the Idaho Potato. In this town of approximately 1800 people there is better than one telephone for every three persons — higher than the national average — and representing approximately 350% station gain during the 12 years it has been managed by the present owners.

Mr. D. Festus Monsen is president and manager; his son Daun Monsen is vice president and plant superintendent. This is another familiar story of the family team stepping forward as a "matched pair."



# Planning paramount in Cheney conversion

George Gehr, engineer for the Cheney Telephone Company at Cheney, Washington watches Charles Fogg of Stromberg-Carlson explain supervisory alarms.

Charles P. Lund, president of Cheney (Wash.) Telephone Co.

Mr. Charles P. Lund, president of the Cheney (Washington) Telephone Company, and George Gehr, engineer, gave long hours to planning the details of dial conversion and the Open House which was part of the event. The unusual success of the event proved how well this planning paid off.

Cheney is a fast-growing town within easy commuting range of Spokane. The exchange is presently equipped for 400 lines, with direct toll trunks to Spokane. Ample provision has been made for the extension of the rural area served.

Mr. Gehr spoke particularly of the excellence of the installation job performed by the Stromberg-Carlson crew under the direction of Charles Dawson. Local plant personnel were trained at the same time in the functioning of the equipment and maintenance routines so that the "take-over" was smooth.

Charley Fogg, George Gehr, and Charles Dawson, installation foreman for Stromberg-Carlson relax as Cheney makes smooth transition to dial service.

## MEET

**James D. Confeld**

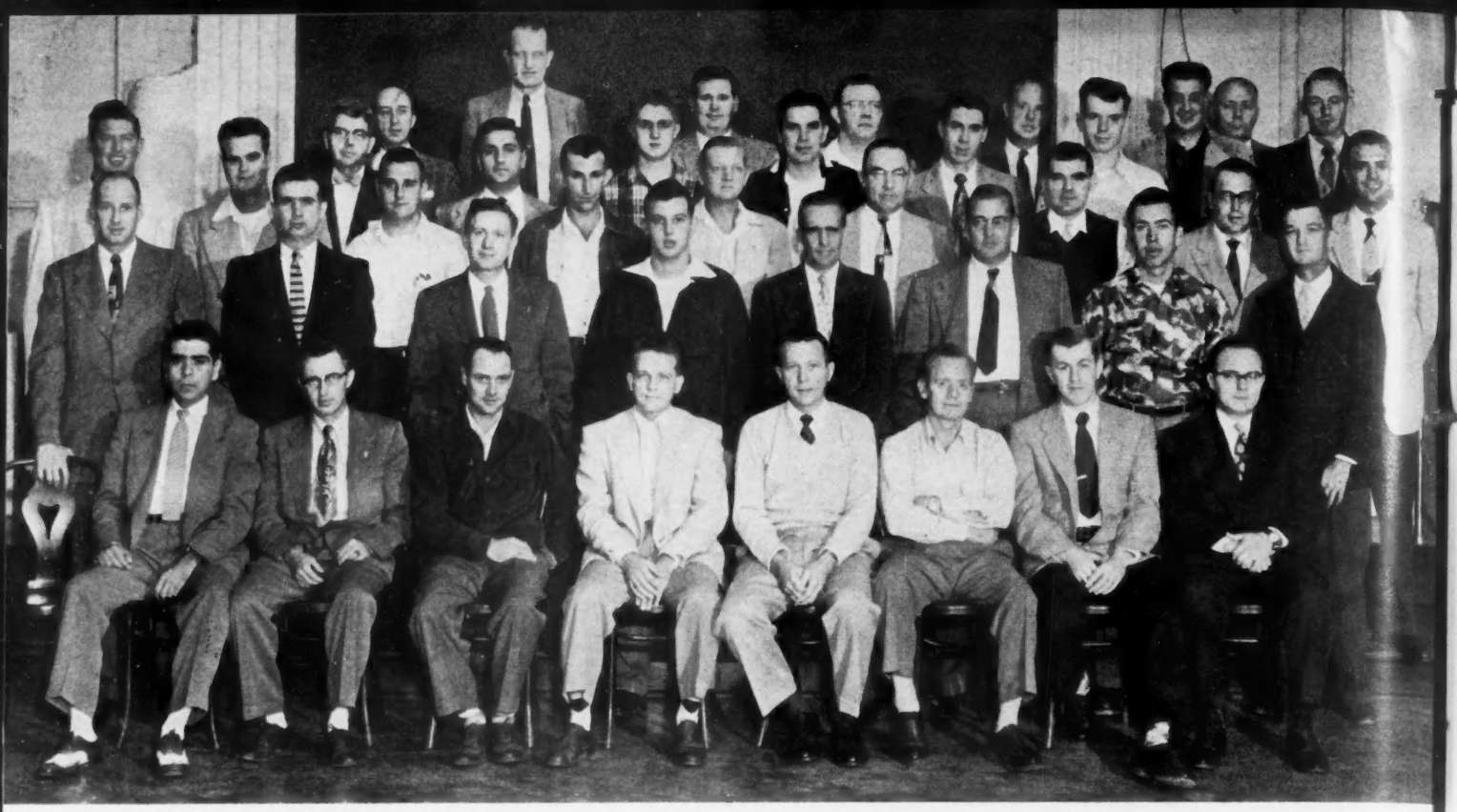
James Confeld has become a specialist in one field of telecommunications development, but to his specialty he brings a background of varied work experience, and an analytical mind that first rules out the word "impossible" and then sifts practicality out of the theoretical.

As section head for Toll Ticketing development, James Confeld has become well known to many Independent managers already embarked on their Direct Distance Dialing program. It is pretty generally agreed that some form of direct toll service and associated billing procedures is as inevitable as dial service itself; the concern of operating companies to prepare themselves for this eventuality has plunged Jim and his group from "sole to scalp" in drawing up proposals and implementing these programs.

The essentially nationwide character of direct distance dialing has brought Mr. Confeld many invitations to conference meeting with both Independent and Bell System groups. In 1955 he read a paper at the A.I.E.E. Southern District meeting at St. Petersburg, Florida. At one point the "distance" aspects of his job made him an infrequent guest in his own home.

Jim Confeld was born in Minneapolis, but grew up in Iron Mountain, Michigan, and received his B. S. in Electrical Engineering at Michigan College of Mining and Technology. His first position was with Stromberg-Carlson; progressing from testing dial circuits to designing these circuits, he later moved over to Research in the electronic switching group. For the next two years Jim picked up valuable outside experience as a service engineer, then returned to circuit designing, sales proposals and the present job of guiding the toll ticketing development program.

Mr. and Mrs. Confeld (Rochesterian Ruth Razes) have two daughters: Norene, 5, and Linda, almost 2; they have recently moved into a new home which is both a pre-occupation and a retreat where Jim and the family can enjoy their hobby of home-designed high fidelity music.



Graduates and teaching staff in a recent class at the XY Training School in Rochester, New York.

## Classes confer confidence as well as certificates...

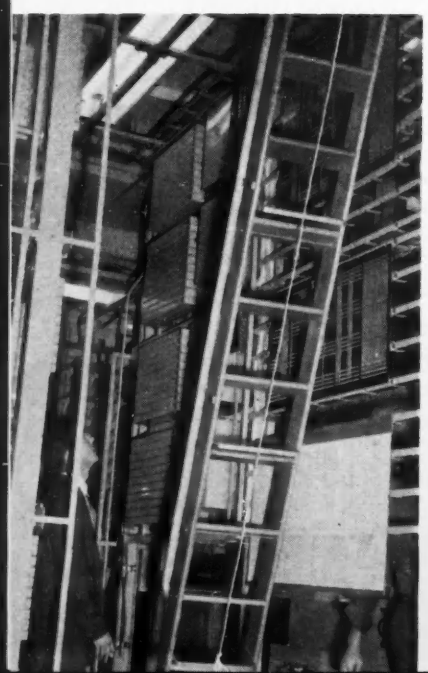
**FIRST ROW:**
Gregorio Ortera-Perez, U. S. Army, Holloman AFB, N. M.; Ralph E. Bond, Farmers Mutual Tel. Co., Clarinda, Iowa; Robert A. Coulter, Arvig Tel. Co., Pequot Lakes, Minn.; Robert J. Foerst, U. S. Air Force, Sacramento, Calif.; James D. Houston, Northeast Mo. Rural Tel. Co., Lancaster, Mo.; Joseph DiVita, Instructor; Paul T. Bonnet, S-C Engr.; Michael C. Georgalas, S-C Engineer.

**SECOND ROW:**
Logan L. Ovesen, U. S. Army, Hodgenville, Ky.; Richard A. Thomas, U. S. Army, Holloman AFB, N. M.; Paul N. Hochmuth, U. S. Air Force, Vacaville, Calif.; Franklin R. Currin, Inter-Mountain Tel. Co., Sugar Grove, Va.; William J. Officer, Northeast Fla. Tel. Co.; Macclenny, Fla.; George H. Johnson, Cross Tel. Co., Warner, Okla.; John R. Brehm, U. S. Air Force, North Highlands, Calif; Earnest V. Johnson, Arvig Tel. Co., Remer, Minn.

**THIRD ROW:**
Jacke G. Weaver, Peoples Telephone Co., Collinsville, Ala.; J. D. Gorman, U. S. Air Force, Spokane, Wash.; Clinton L. Sargent, Saco River Tel. & Tel. Co., West Scarborough, Maine; Jack F. Payne, Canton Tel. Co., Woodstock, Ga.; Joseph T. Jarrett, Zephyrhills Tel. Co., Zephyrhills, Fla.; Herman P. Weissert, Eustis Tel. Ex. Inc., Eustis, Nebr.; Larry E. French, Augusta Tel. Co., Augusta, Mich.; Robert R. Chapman, S-C Engineer; Raymond J. Hasenauer, S-C Engineer.

**FOURTH ROW:**
John H. Voss, Vice-President, Telecommunication Division; Angelo R. Aschettino, Instructor; Richard C. Solversen, Lackawaxen & Hawley Tel. Co., Rowland, Penn.; Hiram L. Tomlinson, Topsham Tel. Co., East Corinth, Vermont; William D. Kurtz, S-C Engineer; John W. Tibbetts, U. S. Army, Arlington, Mass.; Glenn W. Griffin, Amery Tel. Co., Amery, Wisc.; William R. Jay, Creston Mutal Tel. Co., Orient, Iowa.

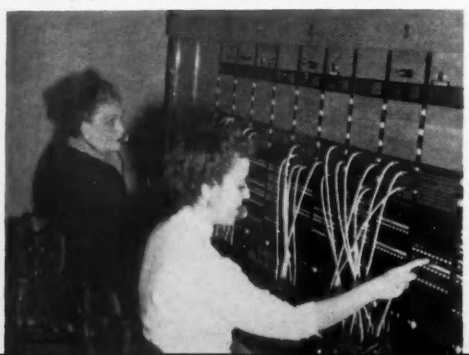
**FIFTH ROW:**
Henry C. Sheve, Manager, Government Department; Roy W. Jones, Development Director; R. Robert Bankes, Instructor; Eugene A. Scheel, Instructor; Colby Knapp, Assistant Sales Manager; W. Eugene Shaffer, Acting Engineer in Charge.



## Made-to-Order Lab.... New Company XY-PBX

Growing pains at home, too! As Stromberg-Carlson has grown, need for additional telephone service was imperative. The Rochester Telephone Corporation had a neat answer; put in a new "city-size" XY-PBX to the Electronics Center. XY Training School students here at the time watched the installation with keen interest. Mrs. Elaine Klauss (foreground) is Chief Operator.

Dial equipment and Attended Switchboard.




**STROMBERG-CARLSON TRANSMITTER**

Published by
The Telecommunication Division
STROMBERG-CARLSON COMPANY
A DIVISION OF
GENERAL DYNAMICS CORPORATION
Rochester 3, New York
GEORGE B. FORBES, *Editor*


XY is a registered trade-mark of Stromberg-Carlson Co

# INDEX TO ADVERTISING


Acme Visible Records, Inc. ..... 23
Acorn Insulated Wire Co. ..... 78
Alphaduct Wire & Cable Co. ..... 78
Aluminum Co. of America ..... 64-65
American Chain & Cable Corp. ..... 27
American Creosoting Co. .....
American Creosoting Co. .....
American Tel. & Tel. Co. .....
Ansonia Wire & Cable Co. ..... 83
Anaconda Wire & Cable Co. ..... 72-73
Armstrong Cork Co. .....
Arrow Fastener Corp. ..... 34
Automatic Electric Sales Corp. ..... 4, 14, 60-61, 80-81, 101
Bakelite Co. .....
Bartlett Mfg. Co. .....
Barber-Greene Co. ..... 35
Bashlin Co., W. M. ..... 78
Benner-Nawman, Inc. ..... 104
Berry & Co., L. M. ..... 2
Bishop Mfg. Co. .....
Bohnsack Equip. Co. .....
Buckeye Telephone & Supply Co. ..... 71
C & D Batteries, Inc. ..... 103
Cable Spinning Equipment Co. .....
Calculagraph Co., Inc. .....
Chance Co., A. B. ..... 104
Chase Brass & Copper Co. .....
Collins Radio .....
Commercial Cord & Supply Co. ..... 26
Communi-Catering .....
Cook Electric Co. .....
Copperweld Steel Co. ..... 24-25
Crane, Carl C. ..... 107
Cullom & Ghertner Co. ..... 107
Davis Construction Co. ..... 107
Detroit-Macoid Corp. .....
Dillon Co., Inc., W. C. .....
Donnelley & Sons, R. R. ..... 27
Exide Industrial Div'n. The Electric Storage Battery Co. ..... 36
Felt & Tarrant, Inc. ..... 40
Fisher Research Laboratory, Inc. .....
Fitchburg Engr. Corp. .....
Gai Phones .....
Geeco, Inc. .....
General Cable Corp. ..... 7
General Insulated Wire Co., Inc. .....
General Telephone Directory Co., 78, 120
Giant Mfg. Co. ..... 78
Gladwin Plastics, Inc. ..... 55
Gorman-Rupp Co. .....
Gould National Batteries, Inc. .....
Graybar Electric Co. .....
Greenlee Tool Co. ..... 102
Hammond Drierite Co. .....
Harris-McBurney Co. .....
Henkels & McCoy ..... 106, 107
Highway Trailer Co. ..... 78
Holan Corp., J. H. ..... 32
Holtzer-Cabot Telephone Equipment Div. of National Pneumatic, Inc. ..... 8
Hubbard & Co. ..... 17
Independent Tel. Repair Co. .....
Indiana Steel & Wire Co. ..... 108
International Harvester Co. .....
Instrument Laboratories ..... 104
Katolight Corp. .....
Kearney, James R., Corp. ..... 102
Kellogg Switchboard & Supply Co. ..... 76-77, 92, 93
Kennecott Wire & Cable Corp. .....
Keystone Steel & Wire Co. ..... 85
Kimble Glass Co. ..... 47
King, W. T. .....
Klein & Sons, Mathias ..... 30
Koiled Kords, Inc. ..... 3
Leich Sales Corp. ..... 56-57
Linde Air Products Co. ..... 10
Lindsay Telephone Supply ..... 97
Lorain Products Corp. ..... 15
Mahood, Edwin T. .....
Markwell Mfg. Co. .....
McCabe Powers Auto Body Co. ..... 33
McNulty, Dan .....
Midwest Electronics .....
Mine Safety Appliance Co. .....
Minnesota Mining & Manufacturing Co. .....
Mitchell, Jay G. ..... 107
Morrison-Pelsue Co. ..... 86
Murphy Engineering Laboratories, Inc. ..... 69
Natco Corp. ..... 117
National Tel. Supply Co. .....
Neale Construction Co. .....
Neuses Co. .....
Newman Mfg. Co. .....
North Electric Co. ..... 18-19
Northwest Radio & Television School .....
Overton Co. .....
Owens Illinois Glass Co. ..... 47
Page & Hill, Inc. ..... 6
Phelps Dodge Copper Products Corp. 28-29
Plastic Wire & Cable .....
Porcelain Products, Inc. ..... 96
Prairie Implement Co. ..... 96
Preformed Line Products Co. ..... 119
Power Tools Corp. .....
Raytheon Manufacturing Co. ..... 16
Reliable Electric Co. ..... 9
Remington Rand, Inc. .....
Republic Creosoting Co. ..... 75
Rex Corp. .....
Reynolds Metals Co. .....
Runzel Cord & Wire Co. ..... 31
Schauer Manufacturing Corp. .....
Seabrook Hotel .....
Seymour Smith & Son, Inc. ..... 87
Sherron Metallic Corp. ..... 78
Sloan, Cook & Lowe ..... 107
Stahl Metal Products .....
Stewart Bros. ..... 104
Stromberg-Carlson Co. ..... 13, 38-39, 98-99, 100, 109-116
Sturgis Posture Chair ..... 117
Superior Cable Corp. ..... 11
Suttle Equipment Co. ..... 90
Taylor-Colquitt Co. ..... 27
Tel-E-Lect Products, Inc. .....
Teletype, Inc. .....
Telephon Accounting Services .....
Telephone Engineer Publishing Corp. ..... 55
Telephone Equipment, Inc. .....
Telephone & Power Supply Co. ..... 107
Telephone Repair & Supply Co. ..... 78
Telephone Supply Corp. .....
Telkor, Inc. ..... 107
Texas Creosoting Co. ..... 78
Tudor & Yager ..... 107
Universal Controls. Inc. .....
U. S. Independent Tel. Assoc. .....
U. S. Instruments ..... 84
U. S. Steel Co. (Chem. Div.) ..... 52-53
U. S. Steel (American Steel & Wire) .....
Western Electric Co. ..... 88-89
Whitaker Reel Mfg. Co. .....
Whitney Blake Co. ..... 20-21
Williams, Geo. E., Co. .....
William Inspection Co., A. W. ..... 107
Wyoming Valley Equip. Co. .....
York Hoover Corp. ..... 105



**NATCO**
**CLAY CONDUIT**

The proved and standard protection for Underground Telephone Cables. Highest quality and full line of shapes.

**NATCO CORPORATION**
327 Fifth Avenue, Pittsburgh 22, Pa.

Sturgis designs a new all purpose chair

**for America's army of men and women office workers . . .**

The seat is thick with foam rubber. The posture-curved backrest cradles the small of the back in still more foam rubber. And you can scuff the fiber glass base incessantly—you'll never mar it. It's a comfortable chair, a rugged chair, and best of all, a low priced chair. Ask your Sturgis Dealer to show you the 840-G. The Sturgis Posture Chair Company, Sturgis, Michigan. Address inquiries to The Sturgis Posture Chair Company, General Sales Offices, 154 East Erie Street, Chicago 11, Illinois.

# THE BACK OF THE BOOK

By JOHN G. REYNOLDS

## The Tailor-made View

BY WAY of *Pacific Telephone Magazine* (*PTM*) we learned about the Texas oilman who was barreling along the highway in an expensive car when he screeched to a stop to pick up a hitchhiker. Climbing in, the young fellow noticed a pair of thick-lensed glasses lying on the seat.

As the telephone poles began flying by in a blur, he grew more and more uneasy. "Beg pardon, mister," he ventured, "but don't you need your glasses while you're driving?"

"Shucks, son, don't let that bother you," drawled the Texan. "This here windsheld is ground to my prescription."

## "Cut To The Bone"

AN IMPATIENT subscriber got a grisly picture of telephone operations, recently, according to the *Illinois Bell Telephone News*.

A service representative was trying to explain why a job couldn't be done on Saturday. Her tongue stumbled in the attempt.

"*We only have a small force of skeleton men working on Saturday*," she reported.

## "That Makes Sense"

IF A TELEPHONE man hadn't vouched for his story, we'd be hard put to believe it. But we have it on good authority that a Norwalk, Ohio, subscriber put through a call, requesting to be connected with a veterinarian in a nearby community.

"Is this a personal call?" inquired the operator.

"Of course not!" snapped the caller. "It's my dog that's sick."

## "Not For Housekeeping"

LAST MONTH Judge Beverly Boushe of Memphis, Tenn., let the world know that he does not approve of the practice of setting up housekeeping in telephone booths at bus stations.

This all came about when a Mississippian was arrested at the Greyhound Lines terminal. He had removed his shirt and shoes and was sleeping in a telephone booth, or, rather, half in and half out of the booth.

"What've you got to say?" the judge wanted to know.

"I'd like to take it to a higher court," the defendant said without hesitation.

"Well," said Judge Boushe, "let's try it in this court first. You might not want it taken to a higher court."

After that the defendant admitted he had been sleeping in the booth. Earlier, he said, he had written a letter at the booth while another man slept. When he promised to register in a hotel on his next trip to Memphis, Judge Boushe dismissed the loitering charge.

## "Sorry, Wrong Number!"

NOT MUCH has been said about the situation, but reliable sources told us the Communications officials in Colombo, Ceylon are still waiting for someone in Moscow to pick up the telephone and say "hello." Ceylon and Russia were linked recently by a radio-telephone circuit. Since then Ceylon's Communications Minister C.A.S. Markikkar has been standing by to exchange a few words with a Soviet counterpart to formally inaugurate the link. So far despite numerous letters and cables from the communications industry, no one on the Soviet end has been willing to talk.

## "Short-Shorts"

LAST MONTH the planned installation of outdoor telephone pay stations in Edmonton, Alberta, received a setback. C. E. Brown, superintendent of the municipal telephone system, reported to city council one station had been installed. But someone stole it — booth, telephone, and wires! . . . The new outdoor phone booths installed on Tokoy's busy streets have light gray bodies and red tops. They are popularly known as "Tancho" or red-heads. Other red booths in tobacco shops and drug stores are called "Aka-Denwa" or pretty little dolls.

**DANGER AHEAD**

WHERE WILL NEW JOBS FOR US COME FROM IF VENTURE CAPITAL FOR THE GROWTH OF NEW BUSINESSES AND NEW PRODUCTS IS DESTROYED?
?
SURTAX BURDEN
$
OUR EXPANDING POPULATION
GRAHAM HUNTER

*You can see why linemen prefer*

# GUY-GRIP Dead-Ends

Linemen are enthusiastic!

PLP GUY-GRIP dead-ends are the easiest, fastest and safest method yet devised for dead-ending strand.

Installation is easy because it takes just one unit, no moveable parts, no bolts or clamps to tighten. It's fast. All you do is hand-wrap the dead-end legs around the strand.

And it's safe. You can see at a glance that the installation is completed and thus secure. Linemen make better time, take pride in their work.
Dept. No. TR1B

PX-81

PREFORMED LINE PRODUCTS CO.
5349 ST. CLAIR AVE. • CLEVELAND 3, OHIO
TELEPHONE: CLEVELAND EXpress 1-3571

Made in accordance with or for use under U. S. Patent No. 2,761,273; other patents issued and pending.

# why buy a cow when milk is cheap?

To put it another way – why bother publishing your own directory?

Right now we handle the complete job for independent telephone companies in 4400 communities . . . and up their revenues in the process.

If you're caught in the squeeze between rising costs and profit margins, you'll save time, worry, money with our Complete Directory Service Plan. Like more information? Simply call or write our nearest office.

GENERAL SYSTEM

## GENERAL TELEPHONE DIRECTORY COMPANY

1800 Busse Highway • DES PLAINES, ILLINOIS • VAnderbilt 4-2164

Divisional Sales Offices

COLUMBIA, Mo. • 811 Cherry Street • GIbson 2-6907
DURHAM, N.C. • 108 E. Parrish Street • Tel: 5133
ERIE, Penna. • G. Daniel Baldwin Building • Tel: 2-4187
FORT WAYNE 2, Ind. • 229 E. Berry Street • Eastbrook 3477
LEXINGTON, Kentucky • 157 Walnut Street • Tel: 4-7626
LONG BEACH 15, Calif. • 1775 Ximeno Ave. • HEmlock 3-7441
MADISON, Wisconsin • Tenney Building • ALpine 7-1667
SAN ANGELO, Texas • 110 South Taylor St. • Tel: 6738
SPOKANE, Wash. • 108 N. Washington St. • MAdison 4-4336
SPRINGFIELD, Ill. • Myers Bros. Building • Tel: 8-3425